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ABSTRACT

This curriculum guide outlines a 3-year sequence of complementary courses designed to provide students (especially in Alberta, Canada) with a broad awareness of the economic, social, and scientific realities of the agricultural enterprise. Information is presented in context, through hands-on activity, through experimentation, and through examination of current agricultural practices. The guide is organized in seven chapters. Chapter 1 introduces the program and provides information on program rationale and philosophy, goals, organization, and planning considerations. Chapters 2 through 4 outline each of the three years' programs, covering three themes (production, processing, and marketing; technology and research; resource management) and a survey topic (what is agriculture?). For each theme, a topic outline matches topics with suggested student activities and learning resources. Chapter 5 provides additional optional units. Chapter 6 provides an annotated listing of learning resources. Chapter 7 is an appendix that lists supplementary learning resources by source. (KC)

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Junior High School

TEACHER RESOURCE MANUAL

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AGRICULTURE: LAND AND LIFE

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**JUNIOR HIGH
AGRICULTURE: LAND AND LIFE
TEACHER RESOURCE MANUAL**

1989

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NOTE: This publication is a support document. The advice and direction offered is suggestive except where it duplicates or paraphrases the contents of the program of studies. In these instances, the content is screened in the same distinctive manner as this notice so that the reader may readily identify all prescriptive statements or segments of the document.

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TABLE OF CONTENTS

CHAPTER 1 – Introduction/1

Program Rationale and Philosophy/3

Goals of the Junior High Agriculture: Land and Life Program/4

Program Organization/5

- Year One, Year Two, Year Three Format/5
- Program Themes/5
- Optional Units/6
- Scope and Sequence/7
- Required/Elective Components/8

Planning Considerations/8

- Number and Duration of Units/8
- Timing of Units/8
- Learning Resources/9
- Use of Community Resources/9
- Student Projects/10

CHAPTER 2 – Year One Program/11

THEME 1: PRODUCTION, PROCESSING AND MARKETING

Production, Processing and Marketing Case Study/13

- Overview/13
- Objectives/13
- Topic Outline, Suggested Student Activities, Learning Resources/15
- Authorized Learning Resources/18

SURVEY: WHAT IS AGRICULTURE?

- Overview/19
- Objectives/19
- Topic Outline, Suggested Student Activities, Learning Resources/20
- Authorized Learning Resources/23

THEME 2: TECHNOLOGY AND RESEARCH

Mechanical Technology Case Study/25

- Overview/25
- Objectives/25
- Topic Outline, Suggested Student Activities, Learning Resources/27
- Authorized Learning Resources/30

THEME 3: RESOURCE MANAGEMENT

Water/31

- Overview/31
- Objectives/31
- Topic Outline, Suggested Student Activities, Learning Resources/32
- Authorized Learning Resources/35

CHAPTER 3 – Year Two Program/37

THEME 1: PRODUCTION, PROCESSING AND MARKETING

Production, Processing and Marketing Case Study/39

- Overview/39
- Objectives/39
- Topic Outline, Suggested Student Activities, Learning Resources/41
- Authorized Learning Resources/45

SURVEY: WHAT IS AGRICULTURE?

- Overview/47
- Objectives/47

THEME 2: TECHNOLOGY AND RESEARCH

Technology for Planning, Monitoring and Managing Case Study/49

- Overview/49
- Objectives/49
- Topic Outline, Suggested Student Activities, Learning Resources/51
- Authorized Learning Resources/54

THEME 3: RESOURCE MANAGEMENT

Soil/55

- Overview/55
- Objectives/55
- Topic Outline, Suggested Student Activities, Learning Resources/57
- Authorized Learning Resources/60

CHAPTER 4 – Year Three Program/63

THEME 1: PRODUCTION, PROCESSING AND MARKETING

Production, Processing and Marketing Case Study/65

- Overview/65
- Objectives/65
- Topic Outline, Suggested Student Activities, Learning Resources/67
- Authorized Learning Resources/72

SURVEY: WHAT IS AGRICULTURE?

- Overview/75
- Objectives/75

THEME 2: TECHNOLOGY AND RESEARCH

Biotechnology Case Study/77

- Overview/77
- Objectives/77
- Topic Outline, Suggested Student Activities, Learning Resources/79
- Authorized Learning Resources/82

THEME 3: RESOURCE MANAGEMENT

Land Use/83

- Overview/83
- Objectives/83
- Topic Outline, Suggested Student Activities, Learning Resources/85
- Authorized Learning Resources/89

CHAPTER 5 – Optional Units/91

Optional Units – Introduction/93

Unit Outlines and Authorized Learning Resources/94

CHAPTER 6 – Learning Resources/109

Definitions/111

Basic Learning Resources/111

Recommended Learning Resources/112

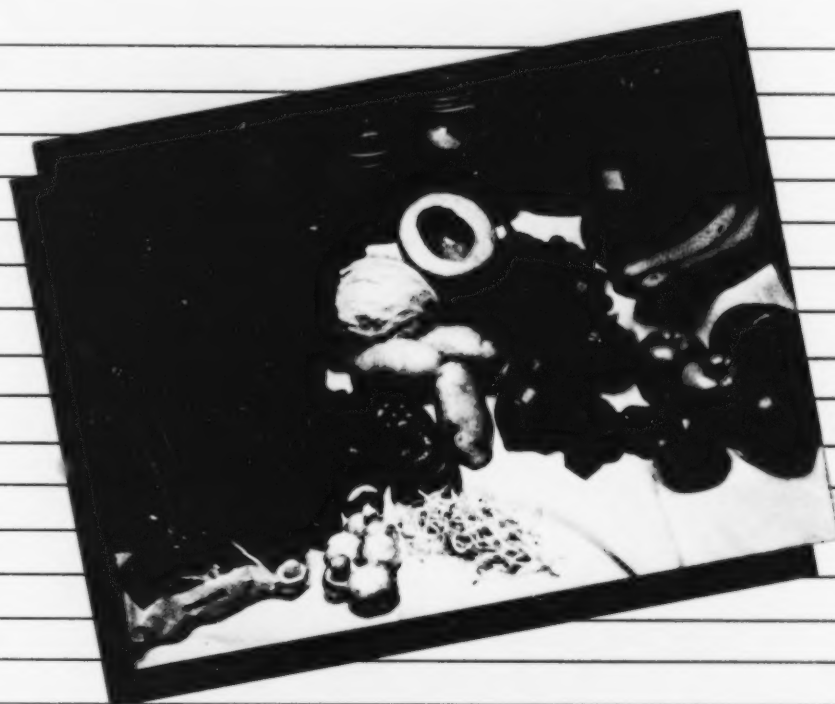
Supplementary Learning Resources/113

CHAPTER 7 – Appendix/141

Supplementary Learning Resources Listing by Source/143

CHAPTER

1



INTRODUCTION

PROGRAM RATIONALE AND PHILOSOPHY

"The aim of education is to develop the knowledge, the skills and the positive attitudes of individuals, so that they will be self-confident, capable and committed to setting goals, making informed choices and acting in ways that will improve their own lives and the life of their community."

Secondary Education in Alberta,
June 1985

The Junior High Agriculture: Land and Life Program provides a three-year sequence of complementary courses in support of the aim of education stated above. The program is designed to provide students with a broad awareness of the economic, social and scientific realities of the agricultural enterprise. Learnings are introduced in meaningful contexts, through hands-on activity, through experimentation and through examination of current agricultural practices. The program offers students the opportunity to explore personal interests as well as to broaden their understandings of the world in which they live.

The program is designed to be of interest to all students in the province, whether they be of urban or rural backgrounds. Examples and emphases within the program provide for a balance of perspectives, including those of the consumer and the home gardener as well as the producer and worker in agricultural businesses. The emphasis of the program is thus on awareness, insights and understanding of agriculture rather than on specific vocational knowledge and skills.

GOALS OF THE JUNIOR HIGH AGRICULTURE: LAND AND LIFE PROGRAM

- To develop an awareness of the diversity of agricultural activity in students' local areas, in Alberta, and in the national and international community.
- To develop critical-thinking and problem-solving skills in the process of examining agricultural problems and practices.
- To acquire knowledge of the factors of agricultural production and processing.
- To recognize relationships between producers, processors, marketers and consumers.
- To appreciate agriculture for its economic significance, career opportunities and its impact on quality of life.
- To acquire knowledge and develop skills applicable to plant and animal care in both urban and rural settings.
- To develop a resource management perspective, recognizing areas where personal and public decision making are needed.
- To acquire an awareness of agricultural technologies, including examination of emerging technologies as well as those of the past and present.
- To develop an awareness of societal issues and concerns that are agriculture related.
- To develop an awareness of the scope of agriculture in urban areas.

PROGRAM ORGANIZATION

The organization of the Junior High Agriculture: Land and Life Program reflects the need to give students a broad view of agriculture as well as provide opportunities for pursuing local needs and interests.

Specific guidelines for program organization are as follows:

- **Year One, Year Two, Year Three Format**

Program content is developed over a three-year program sequence. Entry points to the program may be at any of the three levels, but where possible it is recommended that students enter the sequence at the year one level.

For students entering the program at the year two or year three level, it is recommended that the unit **SURVEY: What Is Agriculture?** be included as part of their first year in the program.

- **Program Themes**

In each year of the program, the following three themes are to be developed:

THEME 1: Production, Processing and Marketing

Theme 1 units provide an opportunity for students to study a sample area of agricultural production using a case study approach. The units examine activities of producers, processors, marketers and consumers, highlighting roles and interrelationships of agricultural activity at each stage. The intent is to provide insight into all aspects of a particular segment of the agriculture industry.

SURVEY: What Is Agriculture?

This unit provides a survey of agricultural activity at the local, provincial, national and international levels. The intent of the unit is to expand students' knowledge of the scope of agriculture and to help students recognize the impact of agriculture on society.

THEME 2: Technology and Research

Theme 2 units examine a technology that supports effective agricultural practice. Practical problems in production or processing are considered. In each unit, students explore alternative approaches to problem solution, in many cases through hands-on activities. Activities promote an understanding of the role of research and innovation in ensuring the success of agricultural practice.

THEME 3: Resource Management

Theme 3 units examine the management of the key resources – water, soil and land use – in ways that consider environmental and social impacts as well as effects on agricultural production. The concepts of sustained yield, monitoring and environmental management are central to this unit.

Flexibility is provided in the selection of particular topics to develop the themes. To provide guidance in selecting and organizing content, an example has been developed for each theme at each level. Within the required themes, the approach to topic development is generally through a case study. Using this approach, students have the opportunity to learn important ideas and principles through a focus on a meaningful example.

The program has been designed for 75 hours of instructional time in the required and elective components for each year of the program. Each thematic unit represents a minimum of 12 hours of instruction. Please note that **SURVEY: What Is Agriculture?** is also designed for a minimum of 12 hours of instruction.

- **Optional Units**

Teachers may complete the program by offering a number of optional units selected from the list below. These units provide opportunities for students to pursue areas of interest. Optional units may also serve to provide added focus on local agricultural practices or to broaden students' understanding of agriculture. A minimum of six hours instructional time is recommended for each optional unit.

At each level of the program, students may also study a local interest topic not included in the following list.

Agriculture and Human History	Irrigation
Agricultural Horizons: An Examination of	Landscape and Trees
Agriculture Around the World	Marketing and Advertising
Agricultural Services	Market Gardening
Animal Care	Marketing Systems
Beekeeping	Mushroom Farming
Cattle	Oilseed (Canola)
Computers and Agriculture	Planning and Finances: The Business Side of
Crop Protection	Farming
Farming and Wildlife	Poultry
Forage Crop Production	Processing and Preserving
Fruit Crops	Research and Technologies
Fur Farming	Sheep and Goats
Hogs	Sugar
Home Gardening and Food Production	Transportation
Horses	Trapping
Imports and Exports	Tree Farming
Indoor Gardening	Weather and Crop Management

- **Scope and Sequence**

The program content is organized in a way that provides for themes to be developed over a three-year program sequence. Entry points to the program may be at any of the three levels, but where possible it is recommended that students enter the sequence at the year one level.

THEME	YEAR ONE UNITS	YEAR TWO UNITS	YEAR THREE UNITS
THEME 1: Production, Processing and Marketing	<i>Production, Processing and Marketing Case Study</i> Emphasis on consumer	<i>Production, Processing and Marketing Case Study</i> Emphasis on nutrition	<i>Production, Processing and Marketing Case Study</i> Emphasis on energy
SURVEY: What Is Agriculture?	<i>What Is Agriculture?</i>	<i>(*What Is Agriculture?)</i>	<i>(*What Is Agriculture?)</i>
THEME 2: Technology and Research	<i>Mechanical Technology Case Study</i>	<i>Technology for Planning, Monitoring and Managing Case Study</i>	<i>Biotechnology Case Study</i>
THEME 3: Resource Management	<i>Water</i>	<i>Soil</i>	<i>Land Use</i>
OPTIONAL UNITS	Optional Unit(s) as Selected	Optional Unit(s) as Selected	Optional Unit(s) as Selected

*For students entering the program at the year two or three level, it is recommended that the unit **SURVEY: What Is Agriculture?** be included as part of their first year in the program. Note that this survey unit should follow the Theme 1 unit in order that key ideas and skills from the Theme 1 case study can be utilized.

- **Required/Elective Components**

Each unit of the program has a required component and an elective component, defined as follows:

The **required** component encompasses the knowledge, skills and attitudes that all students should be expected to acquire.

The **elective** component provides opportunities to adapt and enhance instruction to meet the diverse needs, abilities and interests of individual students. It provides enrichment and additional assistance to individual students as necessary.

Activities which may be suitable for use with all students have been suggested to guide teachers in the implementation of the required component. These activities have been identified as "Key Activities" in the topic outline for each theme in this teacher resource manual.

Other activities, which may be more suited to the needs and interests of individual students, have been suggested to assist teachers in the implementation of the elective component. These activities have been identified as "Alternative and Extension Activities" in the topic outline for each theme.

The maximum time allotment for the elective component of the Junior High Agriculture: Land and Life Program shall be 30 percent of the instructional time.

PLANNING CONSIDERATIONS

The following considerations are important to the development and implementation of an appropriate yearly plan.

- **Number and Duration of Units**

Four to six units will normally constitute a year's work. Each unit will normally represent 12 to 15 hours of student activity. A total of 75 instructional hours is recommended for each level of the program, but exact times may be adapted to suit the overall instructional plan of the individual school.

- **Timing of Units**

Consideration should be given to the timing of units in relation to possible field trip activities and in relation to extended plant or animal studies.

All units in the program provide opportunities for field trips within the local area. The selection of particular field trip activities will determine the most appropriate time of year to offer such units. For example: if grain technology is chosen as the focus for the Technology and Research theme in year one, a field trip to examine machines used locally may be considered. A unit planned for early in the year may provide the best opportunity to view grain operations at an active stage. Positioning the unit early in the year would also facilitate the viewing of grain crops and the obtaining of samples for classroom study.

For units in which students may be caring for plants or animals, it may be helpful to continue the unit over an extended period of time. Consideration should be given to running some units and activities simultaneously in order that studies can proceed; e.g., students can proceed with other work while their plants are growing. Note that the greenhouse management topic recommended in the year two program will require this kind of long-term planning. Teachers may want to consider beginning some plant growth activities several weeks before the previous unit has been completed.

- **Learning Resources**

A wide variety of learning resources have been authorized to support the program. These have been listed at the end of each theme, and have been cross-referenced within the topic outline for each theme. A comprehensive annotated alphabetical list of resources is provided in Chapter 6 of this teacher resource manual (see page 109).

No single resource provides a comprehensive coverage of topics within the program, so it will be necessary to select from the many resources listed in accord with the yearly plan. Note that government agencies are identified as the source for many of the supplementary learning resources listed; requests for these publications should be made directly to these agencies. Ordering information for these supplementary learning resources is provided in the Appendix.

The Learning Resources Distributing Centre (Alberta Education) is identified as the source for the two recommended learning resources that support particular units in some depth. Please refer to page 112 for more information. These two resources are:

Space Age Agriculture: Land and Life. Alberta Agriculture, 1988.
Water and Agriculture. Alberta Environment, 1988.

- **Use of Community Resources**

The use of community resources is recommended throughout the program; both resource persons and the physical resources of the community should be considered. Physical resources may include:

- local farms
- local agribusinesses (e.g., processing facilities, farm service industries, wholesale and retail operations)
- transportation and storage facilities
- marketing and auction facilities.

Health and safety should be a prime consideration in the choice of sites to visit and in the planning of those visits. Alberta Education endorses the educational value of such field trips carried out within the framework of local board approval policies, guidelines and procedures.

Resource persons could include:

- farm producers
- food processing specialists
- agricultural supply agents
- district agriculturalists
- municipal district staff
- parents of students in the class.

In considering potential resource persons, it is important that each be given an understanding of the specific educational purposes for which you are asking their assistance, and some insight as to the needs and abilities of your particular students. In many cases, the nature of the school program may be unfamiliar to potential resource persons. It is thus worthwhile to discuss your program at some length and perhaps to provide an outline of your plan for the topic. (Reproduction of a portion of this teacher resource manual may be helpful in this way.)

General areas in which resource persons may be most valuable include:

- identifying and demonstrating specific operations that are involved in a particular industry
- describing the planning and decision making that take place in an agriculture industry
- identifying factors that influence planning and operations and how these operations influence the larger agricultural community
- describing the kinds of activities that are involved in particular agricultural careers.

Resource persons may be particularly helpful when students are involved in project work. A resource person can be the source of both information and advice to the students as the project proceeds.

● Student Projects

At each grade level, it is recommended that at least one unit be developed by use of a project approach. Although any of the topics in the program could be developed through projects, it is particularly recommended that optional topics be handled in this way.

Projects may take a number of forms and involve various levels of teacher guidance. Where the activity is to be largely independent of the teacher, it may be helpful to have students develop a specific plan. A well-developed plan should set expectations for student learnings and identify specific products of learning activities that students will complete.

Where projects involve activity that takes place out of the classroom, teachers should ensure that local board approved policies, guidelines and procedures are followed, and that the planning of such activities gives due consideration to student supervision, safety and liability. Note that a work study format could be considered for those portions of courses that are conducted off-site. For procedures and regulations regarding work study, please refer to the current Junior High School Handbook.

CHAPTER

2



YEAR ONE PROGRAM

YEAR ONE – THEME 1: PRODUCTION, PROCESSING AND MARKETING

Production, Processing and Marketing Case Study

Overview

This unit uses a case study approach. The intent of the unit is to provide a practical examination of production, processing and marketing through the direct study of a particular agriculture industry. The dairy industry has been chosen to illustrate the development of the case study, but the approach followed here may be adapted to any other agriculture related industry. Emphasis is to be placed on a consumer perspective (i.e., food needs and preferences) and its influence on the agriculture industry. In keeping with this consumer perspective, it is suggested that the unit be approached first by examining local food products in relation to consumer needs and preferences. The stages leading up to the final product can then be traced in relation to this initial perspective on the industry.

Opportunities are provided within the unit for students to become involved in activities that are realistic examples of activities within agricultural industries. In particular, students will have opportunities to take initiatives in the design and development of consumer surveys, in the preparation of a sample product, and in the design of a sample marketing strategy.

Objectives

Concepts

Students will develop an understanding of each of the following concepts:

- consumption
- consumer needs and preferences
- products
- merchandising
- processing and packaging
- production (farm operations)
- transportation and storage
- career specializations and expertise
- local, provincial and national production.

Skills

Students will acquire skills in:

- monitoring personal consumption
- assessing consumer needs and preferences
- classifying products
- identifying steps in processing and packaging
- examining role of consumer preferences in determining products
- designing and evaluating approaches to marketing.

Attitudes

Students will develop the following attitudes:

- awareness of the complex and multifaceted nature of an agricultural production industry
- appreciation of the consumer-producer relationship
- appreciation of the role of technologies in agricultural production, processing and marketing
- awareness and appreciation of opportunities for careers in agriculture related industry.

Example Topic: Milk Products

Topic Outline	Suggested Student Activities	Authorized Learning Resources
1. Focus on milk products	Students: • sample dairy products • examine the range of dairy products, identifying characteristics and uses of the various products • construct a collage of dairy product advertisements	<i>Space Age Agriculture: Land and Life</i>, pages B5-B10, B31-B49 Note: For Teacher Reference
2. Monitoring personal consumption	• monitor and record personal and family consumption of milk products; construct charts and graphs of the results * estimate the quantity of milk products consumed in a year: (1) by individuals at different age levels and (2) by a community of people, such as the community made up of the families of all members of the class	<i>Canada's Food Guide Handbook (Revised)</i>, pages 20-22, 40-41
3. Needs and preferences	• discuss the significance of dairy products to nutrition: identify proportions of daily nutritional needs that are met by milk products * identify differences in the amounts of milk products used by different age groups, and their preferences for different groups of milk products (by consumer survey) * discuss and identify characteristics of different forms of milk products that have appeal to different consumers * identify differences in the amounts of milk products used by different cultural groups (or in different nations) • discuss allergy problems related to milk products (may be developed from consumer survey)	<i>Canada's Food Guide Handbook (Revised)</i>, pages 20-22, 40-41 <i>Space Age Agriculture: Land and Life</i>, page B41 Note: For Teacher Reference

- Key Activities
- * Alternative and Extension Activities

YEAR ONE – THEME 1

Production, Processing and Marketing Case Study

Example Topic: Milk Products

Topic Outline	Suggested Student Activities	Authorized Learning Resources
4. Merchandising and packaging of food	Students: ● examine advertisements for milk products and identify their appeal to the consumer ● examine packaging: sizes, forms, labeling and visual layout of packages ● prepare a hypothetical marketing strategy for a new line of dairy products: discuss the nature of the product, who the consumers would be; also design the packaging and a series of advertisements. (These may include posters, audiotapes, videos and direct presentation of a sales pitch.)	<i>Space Age Agriculture: Land and Life</i>, pages B15-B23 Note: For Teacher Reference <i>Space Age Agriculture: Land and Life</i>, pages B21-B28 Note: For Teacher Reference
5. Local production and processing	● examine print and visual materials to learn the steps in dairy processing ● focus on one or two products such as cheese and yogurt: examine the steps in production of these products * visit a dairy or dairy product processing facility. (Note: safety and health considerations may limit access to processing areas.) ● examine the essentials of a dairy farm operation; i.e., livestock selection and management, grazing operations, feed production and preparation, milking operations and sanitary and health considerations * visit a dairy farm	<i>Milk: Where It All Begins</i> <i>Space Age Agriculture: Land and Life</i>, pages B35-B39, B47-B48 Note: For Teacher Reference <i>Space Age Agriculture: Land and Life</i>, pages B11-B14, B51-B86 Note: For Teacher Reference
6. Transportation and storage	● construct a network or flow chart that illustrates the stages of production, processing and marketing of a particular dairy product	<i>Milk: Where It All Begins</i> <i>Space Age Agriculture: Land and Life</i>, pages B30, B78, B80 Note: For Teacher Reference

- Key Activities
- * Alternative and Extension Activities

Example Topic: Milk Products

Topic Outline	Suggested Student Activities	Authorized Learning Resources
7. Specializations and expertise	Students: ● identify materials and services that are required to support a dairy operation; i.e., work force and expertise; feed, food supplements and medicines; land, structures and equipment; energy and transportation ● construct a network chart that illustrates the interrelationship of dairy industry related occupations (brainstorming activity)	<i>Milk and Milk Products</i> <i>Alberta Cattle for Superior Performance</i>, pages 3-5
8. Provincial and national perspective	● examine print or visual materials that show the production and consumption of dairy products at local, provincial, national and international levels ● identify major patterns of trade in dairy products at local, provincial, national and international levels * examine dairy production in other countries	<i>Space Age Agriculture: Land and Life</i>, page B79 Note: For Teacher Reference <i>Dairy Cattle in Alberta</i>

- Key Activities
- * Alternative and Extension Activities

YEAR ONE – THEME 1: AUTHORIZED LEARNING RESOURCES

Example Topic: Milk Products

Recommended Learning Resource

Space Age Agriculture: Land and Life

Brodeur, Cathy, and Peterson, Cole. Alberta Agriculture, 1988. Teacher Handbook, 318 pages.

Note: For Teacher Reference.

Supplementary Learning Resources

Alberta Cattle for Superior Performance

(Agdex 420/32-1) Alberta Agriculture, 1986. Pamphlet, 20 pages.

Canada's Food Guide Handbook (Revised)

Health and Welfare Canada, 1988. Booklet, 56 pages.

Note: The 1986 edition was granted Supplementary status for Health and Personal Life Skills, Grade 8 – Theme IV.

Dairy Cattle in Alberta

(FS 000-13) Alberta Agriculture, 1986. Fact Sheet, 4 pages.

Milk and Milk Products

(No. 990-7) Steinberg, 1982. 16 mm Film, 15 minutes.

Milk: Where It All Begins

The Milk Foundations of Alberta, 1987. Booklet, 12 pages.

YEAR ONE – SURVEY: *What Is Agriculture?*

Overview

This required unit should be offered to students within the first year of their program. The intent of the unit is to provide a comprehensive overview of agricultural activity, providing students with a sense of its diversity and scope. The perspective adopted within this unit is that agricultural activity involves much more than the rural farm, and that the impact of agriculture pervades all of society. The unit examines agriculture at a variety of levels from local to global and introduces students to Alberta's role as both an importer and an exporter of agricultural commodities.

This survey unit should follow the Theme 1 unit as many of the key ideas and skills can be drawn from the Theme 1 case study.

Objectives

Concepts

Students will develop an understanding of each of the following concepts:

- diversity of agricultural operations
- components of agricultural industries: production, processing and marketing
- roles and careers
- agriculture as both producer of products and consumer of goods and services
- historical trends
 - increasing productivity per farmer
 - increasing productivity per unit area of land
 - degradation of farmland in areas of long-term inappropriate land use practices
- local, provincial, national and international food production
- transportation and trade of food products.

Skills

Students will acquire skills in:

- classifying and sequencing steps in the production, processing, marketing and distribution of agricultural products
- interpreting maps and charts
- identifying factors that support or inhibit food production in different areas of the world
- identifying issues in global agricultural production.

Attitudes

Students will develop the following attitudes:

- appreciation of the complex food production, processing and distribution system that exists to meet all our local food needs
- awareness of the diversity of agriculture related activities and occupations
- appreciation of the international nature of food production and distribution
- concern regarding problems in worldwide food production and distribution.

YEAR ONE – SURVEY

What Is Agriculture?

An Overview of the Agriculture Industry

Topic Outline	Suggested Student Activities	Authorized Learning Resources
1. Diversity of agricultural operations (both urban and rural) - processing - production - marketing and distributing 2. Agriculture as both producer and consumer of community services	Students: ● brainstorm: what does agriculture mean to you? ● view film to survey Alberta agricultural activity * produce a video on local agriculture production * collect and classify newspaper articles related to agriculture - news items - advertisements for agricultural products - classified advertisements - business section items ● identify local and Alberta agricultural products - farm products - processed products ● read about and discuss community services that support farm operations - in local area - in province - in Canada	<i>Space Age Agriculture: Land and Life</i>, pages A11-A18, A29-A38 Note: For Teacher Reference <i>Space Age Agriculture: Social Studies</i>, pages 5.1-5.6, 6.1-6.6 Note: For Teacher Reference <i>Space Age Agriculture: Land and Life</i>, pages A39-A46 Note: For Teacher Reference <i>Alberta's Food Products Agriculture in Alberta</i> <i>Space Age Agriculture: Land and Life</i>, pages A51-A56, A101-A103 Note: For Teacher Reference <i>Starting a Farm in Canada</i>

- Key Activities
- * Alternative and Extension Activities

YEAR ONE – SURVEY

What Is Agriculture?

An Overview of the Agriculture Industry

Topic Outline	Suggested Student Activities	Authorized Learning Resources
3. Personal/social perspective - consumer - worker - producer - careers	Students: ● list agriculture related careers * interview members of community regarding involvement with agriculture * compare current agricultural practices in Canada to those of 50 and 100 years ago * compare Canadian agricultural production methods with those of other countries ● discuss what is considered food in different parts of the world ● identify Alberta's agriculture exports and destination of products ● identify imported agricultural products and their area of origin (other provinces or other countries) ● discuss why these products are imported rather than produced locally * view and discuss information regarding Alberta farm production of various foods; comparison with production of these foods in other countries and other areas	<i>Careers in Agriculture</i> <i>Careers in the Agri-Food System</i> <i>Space Age Agriculture: Land and Life</i>, pages A3-A9, A107-A110 Note: For Teacher Reference <i>Tilling the Land</i> <i>Space Age Agriculture: Land and Life</i>, pages A65-A81 Note: For Teacher Reference <i>Farm Facts (for City Folk)</i> <i>Across Canada: Resources and Regions, Second Edition</i>, pages 149-152 <i>Space Age Agriculture: Land and Life</i>, pages A113-A122 Note: For Teacher Reference <i>Men, Machines and Land</i> <i>Feeding the World</i>, pages 15-35 <i>Space Age Agriculture: Land and Life</i>, pages A47, A143-A162 Note: For Teacher Reference <i>Across Canada: Resources and Regions, Second Edition</i>, pages 154-178 <i>Food for Thought</i> <i>Alberta Agricultural Statistics Fact Sheet</i>

- Key Activities
- * Alternative and Extension Activities

YEAR ONE – SURVEY

What Is Agriculture?

An Overview of the Agriculture Industry

Topic Outline	Suggested Student Activities	Authorized Learning Resources
5. Alberta's role in food production - Alberta operations - Alberta and Canada - Canada and the world	Students: * prepare a potluck lunch featuring Alberta products and/or foods from other cultures • identify areas in which local, Alberta and Canadian expertise in food production is being shared worldwide * view, read and discuss information on world trade in food • identify transportation links by which trade takes place: routes and means of transportation * read, view and discuss issues in world agricultural production	<i>Space Age Agriculture: Land and Life</i>, pages A19-A24 Note: For Teacher Reference <i>Space Age Agriculture: Land and Life</i>, pages A169-A178 Note: For Teacher Reference <i>The Reason Why</i> <i>Space Age Agriculture: Land and Life</i>, pages A135-A142 Note: For Teacher Reference <i>Space Age Agriculture: Land and Life</i>, pages A163-A168 Note: For Teacher Reference <i>The Future World of Agriculture</i>, pages 79-94

- Key Activities
- * Alternative and Extension Activities

YEAR ONE – SURVEY: AUTHORIZED LEARNING RESOURCES

Recommended Learning Resource

Space Age Agriculture: Land and Life

Brodeur, Cathy, and Peterson, Cole. Alberta Agriculture, 1988. Teacher Handbook, 318 pages.
Note: For Teacher Reference.

Supplementary Learning Resources

Across Canada: Resources and Regions, Second Edition

Note: Chapter 5 only

Hammell, Christine, and Harshman, Robert. John Wiley & Sons Canada Limited, 1987. Hardcover Book, 332 pages.

Note: The first edition (1980) was granted Basic status for Social Studies, Grade 9, Topic C, in 1981-82. This second edition is presently under review for the revised Junior High Social Studies Program.

Agriculture in Alberta

(Agdex 000-25) Alberta Agriculture, 1988. Booklet, 32 pages.

Alberta Agricultural Statistics Fact Sheet

(Agdex 853) Statistics Branch, Alberta Agriculture, 1988. Pamphlet, 5 pages.

Alberta's Food Products

(Agdex 1100-60) Marketing Section, Alberta Agriculture, 1985. Booklet, 20 pages.

Careers in Agriculture

(No. 143VT) Alberta Agriculture, 1985, 1/2" VHS Videotape, 30 minutes.

Careers in the Agri-Food System

(Pub 5200/E) Agriculture Canada, 1985. Booklet, 13 pages.

Farm Facts (for City Folk)

Canadian Agricultural Chemicals Association, 1983. A Lesson Plan for Urban Schools, 19 pages.

Feeding the World

Fyson, Nance Lui. B.T. Batsford Ltd., London, 1984. Book, 72 pages.

Food for Thought

Latchford, Linda, and Margaret Larkin. Ontario Ministry of Agriculture and Food, 1986. Set of Fact Sheets, 72 pages.

The Future World of Agriculture

Murphy, Wendy B. Walt Disney Productions, 1984. Book, 112 pages.

Men, Machines and Land

Farm and Industrial Equipment Institute, 1974. Book, 73 pages.

The Reason Why

(No. 301) Century II Motion Pictures, 1983. 16 mm Film, 28 minutes.

Space Age Agriculture: Social Studies

Morris, David. Alberta Agriculture, 1988. Set of Lesson Plans, 152 pages.

Note: For Teacher Reference.

Starting a Farm in Canada

(Pub 1659/E) Agriculture Canada, 1983. Booklet, 69 pages.

Tilling the Land

(ACCESS Network No: VC 249606) North America: Growth of a Continent Series, TV Ontario, 1980. 1/2" VHS Videotape, 15 minutes.

YEAR ONE – THEME 2: TECHNOLOGY AND RESEARCH

Mechanical Technology Case Study

Overview

In this case study, students consider practical problems that have faced farmers and food processors since the earliest times: how to plant, harvest and mill grain, and how to do these things in a way that is both efficient and effective. First, the development of techniques and specialized equipment is presented as a form of problem solving where the need for the technology exists, then the inventions and new techniques follow. Students are presented with the problems, then consider both their own ideas and the technologies that have been specifically developed to solve these problems. By tracing the historical development of agricultural equipment, students are able to understand and appreciate the significance of improvements through the years.

Note that although grain technology has been used as an example for this case study, the objectives for the unit can be achieved through the study of any food production or processing industry.

Objectives

Concepts

Students will develop an understanding of each of the following concepts:

- physical work inherent in agriculture
- specific tasks to be performed in producing a particular agricultural product (tasks and subtasks)
- manual and mechanical approaches to production
- power sources: manual, animal, fuels, electrical sources
- technology as a means of problem solving (finding effective and efficient ways to get a job done)
- effectiveness of technologies
- efficiency of technologies
 - efficiency in use of human time and energy
 - efficiency in use of land
 - efficiency in use of other resources
- safety in use of technologies: safety equipment and procedures
- use of alternative technologies; e.g., zero tillage versus intensive cultivation.

Skills

Students will acquire skills in:

- identifying and analyzing sequences of tasks to be performed
- identifying alternative creative thinking approaches to solving a practical problem
- drawing and designing devices to perform given tasks
- constructing models of equipment.

Attitudes

Students will develop the following attitudes:

- appreciation of the human energy and expertise that go into agricultural production
- awareness of human progress in applying technology to agricultural production
- awareness of self as a problem solver
- awareness of the effect of agricultural technology on the overall quality of life
- awareness and appreciation of opportunities for careers in agriculture related industry
- awareness of dangers in working with power equipment
- responsibility regarding personal and group safety in using equipment.

Example Topic: Grain Production and Processing Technology

YEAR ONE – THEME 2

Mechanical Technology Case Study

Example Topic: Grain Production and Processing Technology

Topic Outline	Suggested Student Activities	Authorized Learning Resources
1. Manual work and mechanization 2. Technology as problem solving 3. Examining specific examples of locally used technology (may be farm based or based on processing of farm products)	Students: • separate grain from a head of wheat by hand dissection * learn basic nomenclature regarding grain types and parts of grain plants • discuss alternative technologies to separate grain • use early technologies to separate grain; i.e., flailing and winnowing (in school yard using sticks to break the heads, and dropsheets and the wind to separate the grain from the chaff) • "invent" devices that will automatically remove grain from heads (producing a drawing of a hypothetical machine as well as an explanation of how that machine or model would work) • identify other operations, which must be performed as part of field operations, in the planting and harvesting of grain • discuss seed planting: how deep and at what distance apart • challenge students to design a model "seed planter" using simple paper and plastic materials found around the home	<i>Students' Story of Grain</i>, pages 2-11 <i>Space Age Agriculture: Land and Life</i>, pages A57-A61 Note: For Teacher Reference <i>Feeding the World</i>, pages 4, 15-26 <i>Space Age Agriculture: Social Studies</i>, pages 10.1-10.8, 11.1-11.9 Note: For Teacher Reference <i>Space Age Agriculture: Science</i>, pages 4.1- 4.4 Note: For Teacher Reference <i>Students' Story of Grain</i>, pages 9-10 <i>Air Seeders</i> <i>Machinery for Tillage and Planting</i>

- Key Activities
- * Alternative and Extension Activities

YEAR ONE - THEME 2

Mechanical Technology Case Study

Example Topic: Grain Production and Processing Technology

Topic Outline	Suggested Student Activities	Authorized Learning Resources
3. (continued) 4. Improvements in effectiveness, efficiency and quality of life resulting from use of technology	Students: ● use a hammer and block as a crude milling device for seeds; challenge students to describe how the equipment would need to be improved to be more effective and to be useful on a large scale ● use the flour produced by students to make bread; compare the quality of their fresh ground flour to commercially produced flour ● view and read materials that show the advance of technology used in the grain industry ● identify tasks that need to be done in the transportation, drying, storage and milling of grain ● describe and/or "invent" machines to perform these functions * visit a farm implement dealership or a local farm to examine machinery and learn the principles on which the machinery is based ● prepare a flow chart to illustrate the steps in production and processing of grain * visit a museum to view and examine early grain farming and processing equipment; drawing and describing selected pieces of this equipment ● prepare a chart that outlines the development of a particular agricultural technology: the chart to indicate the problem that was being worked on at each stage and the specific improvement that was made	<i>Space Age Agriculture: Science</i>, pages 6.1-6.10 Note: For Teacher Reference <i>Space Age Agriculture: Land and Life</i>, pages A85-A100 Note: For Teacher Reference <i>The Marvelous Prairie Mega Machine</i> <i>Students' Story of Grain</i>, pages 9-10 <i>Space Age Agriculture: Land and Life</i>, pages C5-C12 Note: For Teacher Reference <i>Men, Machines and Land</i> <i>Space Age Agriculture: Land and Life</i>, pages A59, A61 Note: For Teacher Reference

- Key Activities
- * Alternative and Extension Activities

YEAR ONE – THEME 2

Mechanical Technology Case Study

Example Topic: Grain Production and Processing Technology

Topic Outline	Suggested Student Activities	Authorized Learning Resources
5. Power technologies	Students: ● identify forms and sources of power used on a farm (or in a food processing industry) ● identify means by which power is transferred from one part of a machine to another * monitor the amounts of energy used on a farm (fuels, electricity, etc.)	<i>Conservation Farming</i> , pages 14-42
6. Safety considerations	● identify safety concerns with power equipment: danger points and dangerous operations * view and read material that illustrates safe operation of equipment * identify safety features of equipment ● role play an accident; identify factors that contribute to accidents	<i>Safety Guide for Farming</i>

- Key Activities
- ★ Alternative and Extension Activities

YEAR ONE – THEME 2:

AUTHORIZED LEARNING RESOURCES

Example Topic: Grain Production and Processing Technology

Recommended Learning Resource

Space Age Agriculture: Land and Life

Brodeur, Cathy, and Peterson, Cole. Alberta Agriculture, 1988. Teacher Handbook, 318 pages.
Note: For Teacher Reference.

Supplementary Learning Resources

Air Seeders

(Agdex 768) Prairie Agricultural Equipment Institute, 1983. 16 mm Film, 10 minutes.

Conservation Farming

Hughes, Harold A. John Deere & Company, 1980. Book, 150 pages.

Feeding the World

Fyson, Nance Lui. B.T. Batsford Ltd., London, 1984. Book, 72 pages.

Machinery for Tillage and Planting

(FS 740-2) Alberta Agriculture, 1984. Fact Sheet, 4 pages.

Note: For Teacher Reference.

The Marvelous Prairie Mega Machine

(No. 850 VT) CN Grain Communications, 1987. 1/2" VHS Videotape, 24 minutes.

Men, Machines and Land

Farm and Industrial Equipment Institute, 1974. Book, 73 pages.

Safety Guide for Farming

(Agdex 086-6) Alberta Agriculture, 1987. Booklet, 52 pages.

Space Age Agriculture: Science

Archibald, John. Alberta Agriculture, 1988. Set of Lesson Plans, 126 pages.

Note: For Teacher Reference.

Space Age Agriculture: Social Studies

Morris, David. Alberta Agriculture, 1988. Set of Lesson Plans, 152 pages.

Note: For Teacher Reference.

Students' Story of Grain

Alberta Wheat Pool, 1986. Booklet, 24 pages.

YEAR ONE – THEME 3: RESOURCE MANAGEMENT

Water

Overview

Water is a critical resource to agriculture. In many areas the supply of water is the limiting factor that determines what crop can be successfully grown, and in all areas it influences the size and quality of the crop. The study of water within an agriculture unit thus focuses on the natural supply of water within the province and how that supply can be managed for effective agricultural use.

Objectives

Concepts

Students will develop an understanding of each of the following concepts:

- water needs
- water resources
- landforms and water supply
- variation in water supply
- agricultural water use and management
 - surface moisture
 - ground water
 - conservation practices
 - irrigation and drainage
- water rights
- water issues.

Skills

Students will acquire skills in:

- interpreting charts and maps
- identifying relationships between water supply and topography
- generating alternatives regarding ways to meet water needs
- evaluating strategies for water management
- identifying trade-offs in water uses
- identifying land use practices that affect available water.

Attitudes

Students will develop the following attitudes:

- awareness of the importance of water resources
- awareness of the impact of water shortages and surpluses (economic and social impacts)
- awareness and appreciation of water as a limited resource
- conservation ethic
- awareness and appreciation of opportunities for careers in water management.

YEAR ONE – THEME 3

Water

Topic Outline	Suggested Student Activities	Authorized Learning Resources
1. Introduction: for water needs	Students: - consider the effects of a month totally without water - on humans - on plants of different kinds - on the landscape - observe dried plants and seeds: discuss changes in plants and animals in extreme dry conditions; i.e., death and dormancy - discuss the role of water in living things - water content of living things - water as the basic medium for circulation in living things - water flow through plants: absorption, conduction, transpiration - consider how much water is enough to support life: read about the water needs of particular plants and animals	<i>Water and Agriculture</i>, pages 6-13 <i>University of Alberta Home Gardening Course</i>, pages 322, 401-405 Note: For Teacher Reference
2. Water sources	- identify forms and sources of water available to living things within agricultural environments - construct a chart that indicates agriculture water sources and uses	<i>Water and Agriculture</i>, pages 2-4
3. Water supply - weather/climate - natural transport systems	- review the water cycle and discuss the role of the water cycle in replenishing water supplies - identify forms of precipitation and water equivalent - identify zones in which rainfall is greatest and least in relation to prevailing winds and topography; e.g., Palliser triangle in Alberta - discuss the role of topography in determining rainfall - view and interpret graphs or charts that indicate monthly rainfall in selected areas of the province	<i>S.P.L.A.S.H.</i> <i>Water and Agriculture</i>, pages 14-17 <i>University of Alberta Home Gardening Course</i>, pages 205-211 Note: For Teacher Reference "Catching - and Sharing - Our Share" from "<i>Water Resources Management: 1</i>", in <i>Environment Views</i>, pages 3-6

- Key Activities
- * Alternative and Extension Activities

- Key Activities
- ★ Alternative and Extension Activities

YEAR ONE – THEME 3

Water

Topic Outline	Suggested Student Activities	Authorized Learning Resources
4. (continued)	Students: ● prepare a water budget for a farm ● compare agricultural practices in two localities that have significant variance in water resources	"Too Much, or Too Little" and "Drain the Water, Keep the Soil" from "Water Resources Management: 1", in <i>Environment Views</i>, pages 11-16 "Perspectives on Irrigation" from "Water Resources Management: 2", in <i>Environment Views</i>, pages 12-14
5. Problems and issues	● research water resource issues based on newspapers and other media sources ● discuss competition for water use; role play or dramatize a water management issue (e.g., conservation of natural wetlands, application of chemicals to soil or crops, diversion of water) * debate a water issue; e.g., construction of a major irrigation dam, a water diversion project, pollution of local water supply ● read about and discuss impacts of agriculture on downstream water quality ● discuss need for community decisions regarding water use * read about and discuss international problems in water management and use; e.g., effects of deforestation, salinization of irrigated land, sharing of international resources	<i>Water and Agriculture</i>, pages 24-30 "Drought" in <i>Environment Views</i> "Water Resources Management: 2", in <i>Environment Views</i> <i>Agriculture and the Environment: Summary</i>, page 7 Note: For Teacher Reference <i>Agriculture and the Environment</i>, pages 18-19, 27, 30 Note: For Teacher Reference "Speaking Up" from <i>Water Resources Management 1</i>", in <i>Environment Views</i>, pages 3-6

- Key Activities
- * Alternative and Extension Activities

YEAR ONE – THEME 3: AUTHORIZED LEARNING RESOURCES

Water

Recommended Learning Resource

Water and Agriculture

Alberta Environment, 1988. Kit; Components include Student Book (33 pages), Teacher's Guide, Activity Sheet Masters, Overhead Projector Masters, Masters for Posters.

Supplementary Learning Resources

Agriculture and the Environment

(ECA 81-17/1B5) Sanderson, Kim. Environment Council of Alberta, 1981. Booklet, 58 pages.

Note: For Teacher Reference.

Agriculture and the Environment: Summary

(ECA 82-17/1B14) Sanderson, Kim. Environment Council of Alberta, 1982. Booklet, 10 pages.

Note: For Teacher Reference.

Conservation Farming

Hughes, Harold A. John Deere & Company, 1980. Book, 150 pages.

"Drought", in Environment Views

Volume Eight, Number Six, Spring 1986. Alberta Environment, Periodical, 32 pages.

Dryland Salinity in Alberta

(ECA82-17/1B13) Lilley, John. Environment Council of Alberta, 1982. Booklet, 39 pages.

Note: For Teacher Reference.

"Groundwater", in Environment Views

Volume Four, Number Two, June/July 1981. Alberta Environment, Periodical, 40 pages.

Note: For Teacher Reference.

Groundwater: A Part of the Hydrologic Cycle

(No. 552) Cherry Film Productions, 1979. 16 mm Film, 29 minutes.

Irrigation Agriculture in Alberta: Summary

(ECA 81-17/1B9) Sanderson, Kim. Environment Council of Alberta, 1982. Booklet, 10 pages.

Irrigation in Alberta

(Adgex 560-1) Alberta Agriculture, 1985. Booklet, 10 pages.

Note: For Teacher Reference.

A Link in the Chain

(No. 310VT) Prairie Farm Rehabilitation Administration, 1985. 1/2" VHS Videotape, 28 minutes.

The Magic of Water

(No. 753) Century Films, 1975. 16 mm Film, 27 minutes.

Soil Fertility and Land Productivity in Alberta

(ECA 82-17/1B16) McGill, W.B. Environment Council of Alberta, 1982. Book, 123 pages.

Note: For Teacher Reference.

Space Age Agriculture: Science

Archibald, John. Alberta Agriculture, 1988. Set of Lesson Plans, 126 pages.

Note: For Teacher Reference.

S.P.L.A.S.H.

(NFB 106C 0180 525) Michael Mills Productions for Ontario Ministry of Environment, 1980.

Animated 16 mm Film, 13 minutes.

University of Alberta Home Gardening Course

Harapiah, John. Faculty of Extension, University of Alberta, 1986. Book, 1250 pages.

Note: For Teacher Reference.

"Water Resources Management: 1", in Environment Views

Volume Three, Number Two, June/July 1980. Alberta Environment, Periodical, 36 pages.

"Water Resources Management: 2", in Environment Views

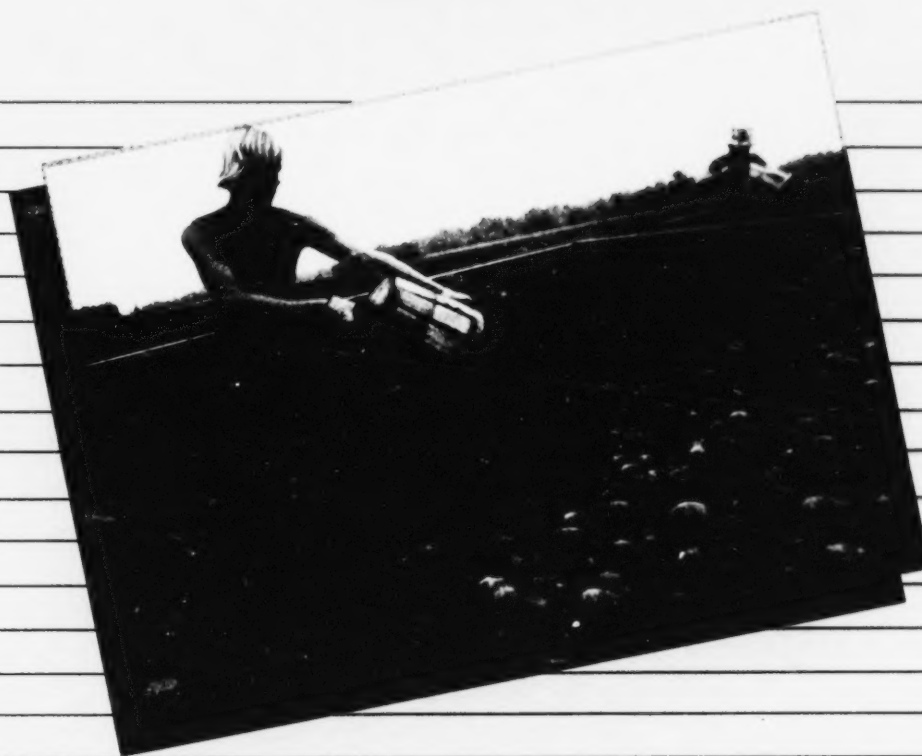
Volume Three, Number Three, August/September, 1980. Alberta Environment, Periodical, 32 pages.

Water, Water: Making the Most of Moisture

(No. 304-1) Alberta Agriculture, 1988. 16 mm Film or 1/2" VHS Videotape, 23 minutes.

CHAPTER

3



YEAR TWO PROGRAM

YEAR TWO – THEME 1: PRODUCTION, PROCESSING AND MARKETING

Production, Processing and Marketing Case Study

Overview

This unit adopts a case study approach. The intent of the unit is to provide a practical examination of production, processing and marketing through the direct study of a particular agricultural industry. The meat processing and production industry has been chosen to illustrate the development of the case study, but the approach followed here may be adapted to any other agriculture related industry.

Overall, the unit follows a similar format to that of the first unit in the Year One Program, but its main focus is the nutritional value of the products rather than consumer preferences. The unit will thus consider dietary needs as well as the relative nutritional value of various food products prepared in a variety of forms.

Objectives

Concepts

Students will develop an understanding of each of the following concepts:

- nutrition (review)
- nutrient composition of foods (focus on proteins)
- consumer needs versus consumer preferences
- products
- merchandising
- processing and packaging
- production (farm operations)
- breed development as a means of increasing quantity and quality of product
- transportation and storage
- local production as a component of provincial, national and international production.

Skills

Students will acquire skills in:

- monitoring personal consumption by nutrient groups
- assessing consumption in relation to nutritional needs
- identifying and classifying products
- comparing alternative sources of nutrient needs
- analyzing steps in production, processing and packaging
- analyzing role of consumer preferences in determining products and packaging.

Attitudes

Students will develop the following attitudes:

- awareness of the importance of diet to human growth, development and continuing function of a healthy body
- awareness of the complex and multifaceted nature of a food production industry
- appreciation of the consumer-producer relationship
- appreciation of the role of technologies in the production and processing of food
- awareness and appreciation of opportunities for careers in agriculture related industry.

Example Topic: Meat Products

YEAR TWO – THEME 1

Production, Processing and Marketing Case Study

Example Topic: Meat Products

Topic Outline	Suggested Student Activities	Authorized Learning Resources
1. Consumption 2. Nutrient composition of foods: proteins, carbohydrates, fats, minerals and vitamins (review) 3. Monitoring meat consumption and preferences	Students: ● identify meat products commonly used as food; discuss taste and nutritional value of each ● monitor and classify personal and family consumption of food products; construct charts and graphs of the results * estimate the quantity of meat and meat products consumed by an individual or a family on a monthly basis ● review daily protein requirements of adolescents and adults ● identify alternative sources of protein * compare protein sources; identify the quality of each food source that would fully meet daily protein requirements ● discuss factors that affect the type of protein sources used; i.e., availability and cost of different forms; nutritional value and cultural values ● discuss the role of meat products in meeting nutritional needs ● view and discuss methods used in preparing meats, comparing the nutritional merits of alternative methods ● discuss and identify characteristics of different forms of meat products that have appeal for different consumers * identify differences in use of products by different cultural groups, and preferences for different kinds of meat products	<i>Canada's Food Guide Handbook (Revised)</i>, pages 23-24, 40-41 <i>Space Age Agriculture: Land and Life</i>, pages D1-D6 Note: For Teacher Reference <i>Build It Better with Beef</i>, Lesson D <i>Canada is Cattle Country</i>, page 5 Note: For Teacher Reference

- Key Activities
- * Alternative and Extension Activities

-42-

- Key Activities
- * Alternative and Extension Activities

61

Topic Outline	Suggested Student Activities	Authorized Learning Resources
4. Packaging and marketing	Students: ● examine advertisements for meat products and identify the appeal to the consumer ● examine packaging: sizes, forms, labeling and visual layout of packages ● prepare a hypothetical marketing strategy for a new line of meat products: discuss the nature of the product and who the consumers would be; also, design the packaging and a series of advertisements	<i>Canada is Cattle Country</i>, pages 19-23 Note: For Teacher Reference
5. Processing and production	● examine print and visual materials to learn the steps in meat processing ● consider one or two products such as hamburger and sandwich meat, examining the steps in the production of these products ● examine the full range of animal products, identifying characteristics and uses of the various products ● read or view materials that describe animal production operations; e.g., grazing operations and feedlots * prepare a model of a feedlot operation ● construct a network or flow chart that illustrates the stages of production, processing and marketing of a particular animal product	<i>Canada is Cattle Country</i>, pages 26-28 Note: For Teacher Reference <i>Canada is Cattle Country</i>, pages 14-17 Note: For Teacher Reference <i>Space Age Agriculture: Land and Life</i>, pages D7-D11 Note: For Teacher Reference

YEAR TWO – THEME 1

Production, Processing and Marketing Case Study

Example Topic: Meat Products

Topic Outline	Suggested Student Activities	Authorized Learning Resources
6. Breed development as a means of increasing quantity and quality of product 7. Career specializations and expertise 8. Transportation and storage	Students: ● read or view materials that describe the relative performance of different breeds ● read or view materials on the improvement of the quality and quantity of meat production through breed improvement * field trip to an auction market or breeding operation * hear a guest speaker on cattle breeds and breeding ● examine the essentials of a beef, hog, sheep or poultry farm operation; i.e., livestock selection and management, grazing operations, feed production and preparations, and sanitary and health considerations ● identify materials and services that are required to support a farm production; i.e., work force and expertise; feed, food supplements and medicines; land, structures and equipment; energy and transportation * visit a beef, hog, sheep or poultry farm ● construct a network chart that illustrates the interrelationship of occupations in an animal product industry ● read about and view materials that describe the transportation and storage of meat products ● compare alternative technologies of preserving meat: refrigeration, freezing, drying, irradiation	<i>Canada is Cattle Country</i>, pages 10-11 Note: For Teacher Reference <i>Canada is Cattle Country</i>, pages 6-7 Note: For Teacher Reference <i>Canada is Cattle Country</i>, pages 24-25 Note: For Teacher Reference

- Key Activities
- * Alternative and Extension Activities

YEAR TWO – THEME 1

Production, Processing and Marketing Case Study

Example Topic: Meat Products

Topic Outline	Suggested Student Activities	Authorized Learning Resources
9. Health issues 10. Local production as a component of provincial, national and international production	Students: ● discuss health issues regarding the storage and display of meat products: storage temperature and shelf life * read about and discuss materials that describe health issues related to the use of hormones and growth supplements in meat production ● examine print or visual materials that show the production and consumption of animal products at the provincial, national and international levels ● identify major patterns of trade in meat products at local, provincial, national and international levels	

- Key Activities
- * Alternative and Extension Activities

YEAR TWO – THEME 1: AUTHORIZED LEARNING RESOURCES

Example Topic: Meat Products

Recommended Learning Resource

Space Age Agriculture: Land and Life

Brodeur, Cathy, and Peterson, Cole. Alberta Agriculture, 1988. Teacher Handbook, 318 pages.

Note: For Teacher Reference.

Supplementary Learning Resources

Build It Better with Beef

Beef Information Centre, 1984. Set of Lessons, 65 pages.

Canada is Cattle Country

The Beef Information Centre, 1984. Set of Lessons, 35 pages.

Note: For Teacher Reference.

Canada's Food Guide Handbook (Revised)

Health and Welfare Canada, 1988. Booklet, 56 pages.

Note: The 1986 edition was granted Supplementary status for Health and Personal Life Skills, Grade 8 – Theme IV.

YEAR TWO – SURVEY: *What Is Agriculture?*

Note: This unit is to be offered here only if students are entering the course at year two.

Overview

This required unit should be offered to students within the first year of their program. The intent of the unit is to provide a comprehensive overview of agricultural activity, providing students with a sense of its diversity and scope. The perspective adopted within this unit is that agricultural activity involves much more than the rural farm, and that the impact of agriculture pervades all of society. The unit examines agriculture at a variety of levels from local to global and introduces students to Alberta's role as both an importer and an exporter of agricultural commodities.

This survey unit should follow the Theme 1 unit as many of the key ideas and skills can be drawn from the Theme 1 case study.

Objectives

See Year One Program (page 19) for listing of concepts, skills and attitudes. A topic outline with student activities is on page 20. A listing of authorized learning resources follows on page 23.

YEAR TWO – THEME 2: TECHNOLOGY AND RESEARCH

Technology for Planning, Monitoring and Managing Case Study

Overview

The process of farm production can be viewed as a series of planned interventions that will enhance the development of a particular food crop. For every action that the farm operator takes, there is usually a best time to do it and generally a most effective way. The decisions of when to plant, how deeply, when to provide fertilizers, supplements or special treatments, and what other conditions should be modified are all dependent on a wide range of changing conditions, each of which needs to be monitored if appropriate action is to be taken.

Intensive agricultural production requires an increasingly high level of planning, monitoring and management. Greenhouse production, the raising of specialized animal breeds and the use of integrated pest management are all examples of such intensive production processes.

Note: Several of the activities will be most successful if preparations are made well in advance. It is suggested that the unit be planned in a way that allows activities to take place over several months; overlapping one activity with another as required. Teaching the unit in conjunction with another unit may be considered.

Objectives

Concepts

Students will develop an understanding of each of the following concepts:

- environments
 - environmental factors
 - natural environments
 - artificial environments
 - micro environments
- competition for nutrients, water and light
- plant cycles
- pest and disease management
- control systems
- optimum conditions for plant growth.

Skills

Students will acquire skills in:

- monitoring plant growth and plant health
- measuring soil moisture and humidity
- applying techniques for plant propagation: planting seeds and bulbs, making cuttings
- preparing a "growth chamber" to meet the needs of a particular plant
- identifying variables that affect plant growth
- creative and critical thinking regarding alternative ways to meet plant needs
- maintaining a record of plant treatments and plant growth
- identifying greenhouse pests and weeds.

Attitudes

Students will develop the following attitudes:

- appreciation of the human energy and expertise that go into agricultural production
- appreciation of the complexity of plant care in controlled environmental conditions
- awareness of self as problem solver
- appreciation of the need for accuracy and precision in the monitoring and managing of living things
- awareness of career opportunities in plant care and plant research
- responsibility regarding personal and group safety in the selection and use of pest controls.

Example Topic: Greenhouse Management

YEAR TWO – THEME 2

Technology for Planning, Monitoring and Managing Case Study

Example Topic: Greenhouse
Management

Topic Outline	Suggested Student Activities	Authorized Learning Resources
1. Introduction to growing plants: some basic techniques 2. Monitoring plant growth 3. Identification of plant needs – environmental factors to be considered – general needs – needs for cyclic changes in the growth environment – specialized needs	Students: ● collect and dry seeds from food or ornamental plants; propagate plants by means of seeds, bulbs, and cuttings (Suggested plants: peas, beans, grasses, coleus, narcissi, onions, geraniums) ● monitor the growth of plants propagated by students * prepare a growth record of a group of plants and show this development graphically; also include information on plant treatments as part of the record * visit a greenhouse, nursery, conservatory or plant store; view plant care equipment and procedures ● view and discuss unhealthy plants, diagnose and discuss possible problems ● discuss general needs of all plants and identify specialized needs of plants: light, humidity, soil conditions ● read about, view and identify natural plant environments * read, view and discuss needs of plants that grow cyclically: day/night changes in light and temperature and moisture ● read about and discuss greenhouse conditions; identify how basic plant needs are met and how conditions are varied to meet particular plant needs	<i>Space Age Agriculture: Science</i>, pages 7.1-7.5, 8.1-8.10 Note: For Teacher Reference <i>Gardening on the Prairies</i>, pages 86-138 <i>Space Age Agriculture: Science</i>, pages 7.1-7.5, 8.1-8.10 Note: For Teacher Reference <i>The Atrium File</i> <i>Gardening on the Prairies</i>, pages 181-192 Note: For Teacher Reference <i>University of Alberta Home Gardening Course</i>, pages 115-117, 203-208 Note: For Teacher Reference <i>University of Alberta Home Gardening Course</i>, pages 319-323 Note: For Teacher Reference <i>University of Alberta Home Gardening Course</i>, pages 1401-1437, 1501-1560 Note: For Teacher Reference

● Key Activities

* Alternative and Extension Activities

YEAR TWO – THEME 2

Technology for Planning, Monitoring and Managing Case Study

Example Topic: Greenhouse
Management

Topic Outline	Suggested Student Activities	Authorized Learning Resources
5. (continued)	Students: * discuss and brainstorm techniques that may be used for growing plants in space • brainstorm, "invent" and produce drawings of future plant environments	<i>The Future World of Agriculture</i>, pages 79-109
6. Pest and disease control	• identify common plant pests and diseases and their effects on plants • read about or view techniques for pest management: chemical, biological and environmental management • discuss the merits of chemical and non-chemical approaches to pest management	<i>University of Alberta Home Gardening Course</i>, pages 601-646 Note: For Teacher Reference <i>Pest Wars</i>
7. Research	• read about or view new technologies for development of new varieties that adapt well to greenhouse production * visit a research facility, view a film or hear a presentation by a guest speaker on a current research topic	<i>The Future World of Agriculture</i>, pages 63-77 <i>Farming for the Future: Progress Report</i> Note: For Teacher Reference
8. Frontiers of production	• read about and discuss the economic costs and benefits of producing food crops in northern environments: Where is this type of production practical (e.g., consider the use of waste heat energy from power plants as a source of heat for greenhouses; also the relative costs of importing food from more southerly climates)? • discuss problems in food production in cold climates and identify ways in which technology and research may provide solutions	<i>Greenhouse Production in Alberta</i>

- Key Activities
- * Alternative and Extension Activities

YEAR TWO – THEME 2: AUTHORIZED LEARNING RESOURCES

Example Topic: Greenhouse Management

Recommended Learning Resources

None identified

Supplementary Learning Resources

The Atrium File

(No. 218) Alberta Agriculture, 1987. 16 mm Film, 1/2" VHS, Beta or 3/4" Videotape, 25 minutes.

Farming for the Future: Progress Report

Alberta Agriculture Research Council of Alberta, 1987. Booklet, 47 pages.

Note: For Teacher Reference.

The Future World of Agriculture

Murphy, Wendy B. Walt Disney Productions, 1984. Book, 112 pages.

Gardening on the Prairies: The Complete Guide to Canadian Prairie Gardening

Vick, Roger. Western Producer Prairie Books, 1987. Book, 246 pages.

Note: For Teacher Reference.

Greenhouse Production in Alberta

(FS 000-19) Alberta Agriculture, 1986. Fact Sheet, 1 page.

Hydroponics: A Guide to Soilless Culture Systems

Grant, Gordon. Alberta Horticulture Research Centre, Alberta Agriculture, 1987.

Pamphlet, 22 pages.

Note: For Teacher Reference.

Pest Wars

(No. 685) Alberta Agriculture, 1984. 16 mm Film, 1/2" VHS or 3/4" Videotape, 28 minutes.

Space Age Agriculture: Science

Archibald, John. Alberta Agriculture, 1988. Set of Lesson Plans, 126 pages.

Note: For Teacher Reference.

University of Alberta Home Gardening Course

Harapiak, John. Faculty of Extension, University of Alberta, 1986. Book, 1250 pages.

Note: For Teacher Reference.

YEAR TWO – THEME 3: RESOURCE MANAGEMENT

Soil

Overview

Soil is a basic agricultural resource. The quality of soil is a major determiner of the success of agricultural production; its loss or degradation is thus of major concern. This unit examines the characteristics of soil that determine its overall quality, and considers problems in soil management.

Objectives

Concepts

Students will develop an understanding of each of the following concepts:

- soil functions
- soil characteristics
 - composition
 - soil nutrients/essential minerals
 - porosity
 - acidity/alkalinity
- soil development
- nutrient cycles
- soil degradation
 - erosional losses
 - nutrient losses: leaching
 - salinization, alkalization and acidification
- soil management
 - soil assessment
 - tillage
 - chemical treatments/recycling of nutrients
- fertilizing: organic and inorganic nutrients
- worldwide soil problems
 - loss of arable land through erosion
 - loss of land through urbanization and transportation corridors
- soil management for household gardening.

Skills

Students will acquire skills in:

- classifying soil components
- describing soil types
- measuring mineral content of soil
- measuring pH of soil
- identifying appropriate measures for preventing erosion in given situations
- identifying and describing problems in soil management
- identifying alternatives in soil management
- growing plants without soil.

Attitudes

Students will develop the following attitudes:

- awareness of the importance of soil resources
- awareness of the effect of land use decisions on soil retention and soil characteristics
- awareness and appreciation of soil as a limited resource
- conservation ethic
- awareness and appreciation of opportunities for careers in soil science and soil management.

Topic Outline	Suggested Student Activities	Authorized Learning Resources
1. Functions of soil	Students: ● view a plant without soil (include roots, stems and leaves), and discuss how the plant is adapted for survival; focus on the plant's adaptation for life in soil ● review plants that naturally grow without need of soil: discuss ways in which these plants are specialized (e.g., water plants, parasitic plants) ● discuss adaptations of plants to soil	<i>University of Alberta Home Gardening Course</i>, pages 300-326 Note: For Teacher Reference
2. Soil characteristics	* view film or video to introduce soil components and types of soil ● examine soil, using a hand lens ● separate soil components by sieving and by sedimentation ● identify components ● identify origins of soil components ● identify soil types by proportion of components * identify soil zones of Alberta * discuss "soil manufacture": how would you go about making soil from scratch?	<i>University of Alberta Home Gardening Course</i>, pages 101-112 Note: For Teacher Reference <i>A Proposed Study Package on Soil</i>, pages 3.1-3.8 Note: For Teacher Reference
3. Relationship to environment/soil development	● read about, view and discuss natural processes of soil development ● observe decomposition of organic materials in a classroom or outdoor mini-study: (1) on the surface of soil, (2) in subsurface conditions * prepare and observe compost ● examine soil by hand lens and microscope to observe microscopic and invertebrate fauna ● identify nutrient cycles in natural and agricultural systems	<i>Soil – How Soil Is Formed Vegetation and the Soil</i> <i>University of Alberta Home Gardening Course</i>, pages 427-428 Note: For Teacher Reference <i>University of Alberta Home Gardening Course</i>, pages 405-412 Note: For Teacher Reference

- Key Activities
- * Alternative and Extension Activities

YEAR TWO – THEME 3

Soil

Topic Outline	Suggested Student Activities	Authorized Learning Resources
4. Plant adaptations to specialized soil conditions 5. Soil management – soil nutrients – natural cycles and fertilizers – chemical manipulation – mechanical manipulation of soil 6. Soil losses – erosion – loss through urbanization – percolation, leaching, salinization and alkalization	Students: * test soil for mineral composition ● test soil for pH ● read, view and discuss material that outlines different nutrient and soil needs of different plants ● view similar plants growing under different soil conditions and/or different soil treatments (review of previous unit) * view plants that have grown under extreme soil conditions, observing adaptations and signs of stress ● read about and view material that describes different soil management practices ● read about, view and discuss soil management alternatives; i.e., chemical manipulations vs recycling of organic materials; cultivation vs no cultivation; irrigation vs water conservation * examine soil properties in relation to water: water capacity and porosity ● identify soil, terrain and climatic factors that contribute to erosion ● observe erosion in city and farm settings ● observe effects of evaporation on soil surfaces ● read and view materials on the effects of water on movement of soil nutrients and pollutants	<i>University of Alberta Home Gardening Course</i>, pages 117-123, 401-424 Note: For Teacher Reference <i>University of Alberta Home Gardening Course</i>, pages 401-432 Note: For Teacher Reference <i>Agriculture and the Environment: Summary</i>, pages 9-22 Note: For Teacher Reference <i>A Sense of Humus</i> <i>Conservation Farming</i> <i>Space Age Agriculture: Social Studies</i>, pages 8.1-8.10, 9.1-9.10 Note: For Teacher Reference <i>Men, Machines and Land</i> <i>Space Age Agriculture: Science</i>, pages 10.1-10.7 Note: For Teacher Reference <i>A Proposed Study Package on Soil</i>, pages 4.1-4.5, 7.1-7.6, 8.1-8.3, 9.1-9.4 <i>"Soils and the Environment"</i>, in <i>Environment Views</i> <i>Soil Fertility and Land Productivity in Alberta</i>, pages 12-23, 49-61, 73 Note: For Teacher Reference

- Key Activities
- * Alternative and Extension Activities

Topic Outline	Suggested Student Activities	Authorized Learning Resources
6. (continued) 7. Soil management in rural, urban and indoor environments 8. Local, provincial, national and international problems in soil management	Students: ● identify land use decisions and their effect on soils ● discuss or debate issues related to soil management; e.g., impacts of urbanization, acid rain, salinization ● read about, view and discuss practices for maintenance of urban soils * compare soils used for different kinds of potted plants ● discuss artificial environments, comparing soil management procedures used in indoor plant operations with soil development and maintenance within natural environments ● read about, view and discuss soil conservation practices and problems in local area and in Alberta * read about, view and discuss soil conservation practices and problems in other countries; e.g., slash and burn soil use, erosional problems of Ethiopia and of Western China ● read about, view and discuss the effects of urbanization on soils	<i>A Proposed Study Package on Soil</i>, pages 10.1-10.5, 11.1-11.4 <i>"Soils and the Environment"</i>, in <i>Environment Views</i> <i>Dryland Salinity in Alberta</i> <i>University of Alberta Home Gardening Course</i>, pages 115-117, 1410-1412 Note: For Teacher Reference <i>Maintaining and Expanding the Agricultural Land Base in Alberta – Terms of Reference and Background Information</i>, pages 9-14 Note: For Teacher Reference <i>Gone with the Wind – Too</i> <i>Oh – Gully! Where Is the Soil?</i> <i>Prairie Soils: The Case for Conservation</i>

- Key Activities
- * Alternative and Extension Activities

YEAR TWO – THEME 3: AUTHORIZED LEARNING RESOURCES

Soil

RECOMMENDED LEARNING RESOURCES

None identified

SUPPLEMENTARY LEARNING RESOURCES

Agriculture and the Environment: Summary

(ECA82-17/1B14) Sanderson, Kim. Environment Council of Alberta, 1982. Booklet, 10 pages.

Note: For Teacher Reference.

Conservation Farming

Hughes, Harold A. John Deere & Company, 1980. Book, 150 pages.

Dryland Salinity in Alberta

(ECA82-17/1B13) Lilley, John. Environment Council of Alberta, 1982. Booklet, 39 pages.

Note: For Teacher Reference.

Gone with the Wind – Too

(No. 573) Alberta Agriculture, 1984. 16 mm Film, 1/2" VHS or 3/4" Videotape, 24 minutes.

Maintaining and Expanding the Agricultural Land Base in Alberta – Terms of Reference and Background Information

(ECA 82-17/RR1) Thompson, Peggy S. Environment Council of Alberta, 1982. Booklet, 24 pages.

Note: For Teacher Reference.

Men, Machines and Land

Farm and Industrial Equipment Institute, 1974. Book, 73 pages.

Oh – Gully! Where Is the Soil?

(No. 572) Tuscan Film Productions, 1983. 16 mm Film, 22 minutes.

Prairie Soils: The Case for Conservation

Prairie Farm Rehabilitation Administration, 1985. Booklet, 12 pages.

A Proposed Study Package on Soil

Canadian Society of Environmental Biologists, Alberta Chapter, 1985. Set of Lessons, 114 pages.

Note: For Teacher Reference.

A Sense of Humus

(NFB 106C 0176 067) National Film Board, 1976. 16 mm Film, 28 minutes.

Soil Fertility and Land Productivity in Alberta

(ECA 82-17/1B16) McGill, W.B. Environment Council of Alberta, 1982. Book, 123 pages.

Note: For Teacher Reference.

Soil - How Soil Is Formed

(No. 521) Interpretive Natural Services, 1978. 16 mm Film, 14 minutes.

"Soils and the Environment", in Environment Views

Volume Three, Number Six, February/March 1981. Alberta Environment. Periodical, 32 pages.

Space Age Agriculture: Science

Archibald, John. Alberta Agriculture, 1988. Set of Lesson Plans, 126 pages.

Note: For Teacher Reference.

Space Age Agriculture: Social Studies

Morris, David. Alberta Agriculture, 1988. Set of Lesson Plans, 152 pages.

Note: For Teacher Reference.

University of Alberta Home Gardening Course

Harapiah, John. Faculty of Extension, University of Alberta, 1986. Book, 1250 pages.

Note: For Teacher Reference.

Vegetation and the Soil

(ACCESS Network No: VC 249604) North America: Growth of a Continent Series, TV Ontario, 1980. 1/2" VHS Videotape, 15 minutes.

CHAPTER

4



YEAR THREE PROGRAM

YEAR THREE – THEME 1: PRODUCTION, PROCESSING AND MARKETING

Production, Processing and Marketing Case Study

Overview

This unit follows a case study approach. The intent of the unit is to provide a comparative study of two or more agriculture industries, examining energy and resource inputs in relation to food production. The key idea of the unit is that different forms of agricultural production and processing each have implications for the amount of energy and other resources required. The energy used in food production contributes in various ways to the final energy of the food product, but this food energy is generally small in relation to the large energy expenditure involved in its production and processing.

The outlines provided for this case study compare the production of vegetable crops for direct human consumption and the production of meat through raising forage crops. The approach followed here may be adapted to other agricultural products, but the main focus should be on the efficiency of production.

Objectives

Concepts

Students will develop an understanding of each of the following concepts:

- range of food crops
- consumption
- consumer needs and preferences
- products
- merchandising
- processing and packaging
- production (farm operations)
- transportation and storage
- inherent and invested energy
- food pyramid
- local production as a component of provincial, national and international production.

Skills

Students will acquire skills in:

- assessing consumer needs and preferences
- assessing energy content of food
- comparing and classifying products
- analyzing steps in processing and packaging
- identifying steps in which invested energy is added
- identifying role of consumer preferences in determining products and packaging.

Attitudes

Students will develop the following attitudes:

- awareness of the complex and multifaceted nature of a food production industry
- awareness of the role of energy in food production
- appreciation of the consumer-producer relationship
- appreciation of the role of technologies in the production and processing of food
- awareness and appreciation of opportunities for careers in agriculture related industry.

Example Topic: Field Crops – Food and Forage

-67-

240

248

Topic Outline	Suggested Student Activities	Authorized Learning Resources
1. Food crops - for human consumption - for animal feed	Students: ● identify field crops produced in Alberta ● identify the range of food and other products that are made from these field crops ● classify field crops according to the use of the final products: human food, animal food and other	<i>Space Age Agriculture: Land and Life</i>, pages A39-A42, A44 Note: For Teacher Reference <i>Agriculture in Alberta</i> <i>Varieties of Annual Forage Crops for Alberta 1987</i> <i>Varieties of Perennial Hay and Pasture Crops for Alberta</i>
2. Food consumption	● monitor and record personal and family consumption of food products ● classify the foods according to origin and form; i.e., (1) plants in original form, (2) processed plant products, (3) meat, (4) processed meat products, and (5) mixed source processed products. Note that many foods will not fit neatly into these categories. Some discussion will be needed to come to terms with what is meant by a processed food. ● construct charts and graphs of the results * based on the monitoring study, estimate the quantity of products consumed in a month or year by a community of people, such as all the members of the class and their families * compare food intake of individuals at different age levels * compare food intake of group studied to national averages	<i>Canada's Food Guide Handbook (Revised)</i> <i>Space Age Agriculture: Science</i>, pages 5.1-5.7 Note: For Teacher Reference

- Key Activities
- * Alternative and Extension Activities

YEAR THREE – THEME 1

Production, Processing and Marketing Case Study

Example Topic: Field Crops –
Food and Forage

Topic Outline	Suggested Student Activities	Authorized Learning Resources
3. Product preferences	Students: ● identify examples of food product preferences found in the study ● discuss reasons for different patterns of food use (identify age level, activity level, concerns regarding additives, cultural patterns, economic considerations, time and convenience considerations, etc.) ● discuss and identify characteristics of different forms of food products that have appeal for different consumers * examine advertisements for products and identify the appeal to specific groups of consumers (target audience)	<i>Space Age Agriculture: Social Studies</i>, pages 12.1-12.13 Note: For Teacher Reference
4. Energy consumption	● use charts that show the energy content of various foods to determine personal food energy consumed ● compare total food energy consumed with figures regarding average food energy needs * compare the food energy of different diets, including some typical examples from third world countries	<i>Canada's Food Guide Handbook (Revised)</i>, pages 47-50 <i>Feeding the World</i>, pages 8-13
5. Energy investment in food (e.g., fuel, fertilizers, processing, packaging)	● examine packaging: sizes, forms, labeling and visual layout of packages ● monitor and record the quantity of packaging that comes with a week's supply of the family groceries (measure mass or write description of materials) ● read and discuss material that describes the energy cost of food processing and packaging * create a new product, design a package for the product and market the product in school (poster, audiotape, videotape or direct sales pitch)	<i>Space Age Agriculture: Social Studies</i>, pages 15.1-15.7 Note: For Teacher Reference

- Key Activities
- * Alternative and Extension Activities

YEAR THREE – THEME 1

Production, Processing and Marketing Case Study

Example Topic: Field Crops –
Food and Forage

Topic Outline	Suggested Student Activities	Authorized Learning Resources
5. (continued)	Students: • prepare a marketing strategy for a line of products designed for consumers who prefer a minimum of processing and packaging • identify energy cost in farm production; i.e., fuel and fertilizers	<i>Conservation Farming</i>, pages 14-42 <i>Farm Energy Management in Alberta</i>
6. Local farm operations	• read about or view materials that describe the field production of cereal crops and vegetables • read about or view materials that describe the role of forage crops in the production of beef cattle * read about or view materials that indicate the quantity of food that can be produced per hectare of various field crops * read about or view similar data on the production of forage crops	<i>Vegetable Production in Alberta</i> <i>Canola Production in Alberta</i> <i>Space Age Agriculture: Social Studies</i>, pages 8.5 - 8.10 Note: For Teacher Reference <i>Men, Machines and Land</i> <i>Rye Production in Alberta</i> <i>Wheat Production in Alberta</i> <i>Barley Production in Alberta</i> <i>Forage Crops in Alberta</i> <i>Beef Cattle in Alberta</i> <i>Pasture Management</i> <i>Principles of Pasture Management</i> Note: For Teacher Reference <i>Forage Harvesting and Handling Systems</i> <i>Pasture Management</i> <i>Oats Production in Alberta</i>

- Key Activities
- * Alternative and Extension Activities

YEAR THREE – THEME 1

***Production, Processing and Marketing
Case Study***

**Example Topic: Field Crops –
Food and Forage**

Topic Outline	Suggested Student Activities	Authorized Learning Resources
8. Food and energy alternatives	Students: ● identify regions in Alberta and Canada where soil and climate support high levels of productivity; identify other regions where production is marginal ● identify regions of Alberta that are more suited to grazing than to production of field crops * read or view materials that compare agriculture in Canada to the agriculture of third world countries; discuss difference in use of technologies and reasons for these differences * read or view material that compares the consumption of processed and packaged foods in Canada with consumption patterns in other parts of the world; discuss reasons for these differences	<i>Soil Fertility and Land Productivity in Alberta</i>, pages 4-70 Note: For Teacher Reference <i>Sunchanger</i>

- Key Activities
- * Alternative and Extension Activities

YEAR THREE – THEME 1: AUTHORIZED LEARNING RESOURCES

Example Topic: Field Crops – Food and Forage

RECOMMENDED LEARNING RESOURCE

Space Age Agriculture: Land and Life

Brodeur, Cathy, and Peterson, Cole. Alberta Agriculture, 1988. Teacher Handbook, 318 pages.

Note: For Teacher Reference.

SUPPLEMENTARY LEARNING RESOURCES

Agriculture in Alberta

(Agdex 000-25) Alberta Agriculture, 1988. Booklet, 32 pages.

Barley Production in Alberta

(FS 000-7) Alberta Agriculture, 1986. Fact Sheet, 3 pages.

Beef Cattle in Alberta

(FS 000-17) Alberta Agriculture, 1986. Fact Sheet, 4 pages.

Canada's Food Guide Handbook (Revised)

Health and Welfare Canada, 1988. Booklet, 56 pages.

Note: The 1986 edition was granted Supplementary status for Health and Personal Life Skills, Grade 8 – Theme IV.

Canola Production in Alberta

(FS 000-9) Alberta Agriculture, 1986. Fact Sheet, 4 pages.

Conservation Farming

Hughes, Harold A. John Deere & Company, 1980. Book, 150 pages.

Energy: Where Do We Go From Here?

(No. 713VT) Alberta Agriculture, 1980. 1/2" VHS Videotape, 28 minutes.

Farm Energy Management in Alberta

(Agdex 769-1) Engineering and Rural Services Division, Alberta Agriculture, 1982.

Booklet, 34 pages.

Note: For Teacher Reference.

Feeding the World

Fyson, Nance Lui. B.T. Batsford Ltd., London, 1984. Book, 72 pages.

Forage Crops in Alberta

(FS 000-12) Alberta Agriculture, 1986. Fact Sheet, 4 pages.

Forage Harvesting and Handling Systems

(FS 745-6) Alberta Agriculture, 1983. Fact Sheet, 12 pages.

Men, Machines and Land

Farm and Industrial Equipment Institute, 1974. Book, 73 pages.

Oats Production in Alberta

(FS 000-8) Alberta Agriculture, 1986. Fact Sheet, 2 pages.

Pasture Management

(No. 135) Alberta Agriculture, 1984. 16 mm Film or 1/2" VHS Videotape, 24 minutes.

Principles of Pasture Management

(FS 130/10-1) Alberta Agriculture, 1977. Fact Sheet, 4 pages.

Note: For Teacher Reference.

Rye Production in Alberta

(FS 000-22) Alberta Agriculture, 1986. Fact Sheet, 3 pages.

Saving Energy and Dollars on the Farm

(Pub 1775/E) Agriculture Canada, 1985. Booklet, 102 pages.

Note: For Teacher Reference.

A Sense of Humus

(NFB Cat. No: 106C 0176 067) National Film Board, 1976. 16 mm Film, 28 minutes.

Soil Fertility and Land Productivity in Alberta

(ECA 82-17/1B16) McGill, W.B. Environment Council of Alberta, 1982. Book, 123 pages.

Note: For Teacher Reference.

Space Age Agriculture: Science

Archibald, John. Alberta Agriculture, 1988. Set of Lesson Plans, 126 pages.

Note: For Teacher Reference.

Space Age Agriculture: Social Studies

Morris, David. Alberta Agriculture, 1988. Set of Lesson Plans, 152 pages.

Note: For Teacher Reference.

Starting a Farm in Canada

(Pub 1659/E) Agriculture Canada, 1983. Booklet, 69 pages.

Sunchanger

(No. 400-9) Elanco Division of Eli Lilly, 1978. 16 mm Film, 12 minutes.

Varieties of Annual Forage Crops for Alberta 1987

(FS 120/32-1) Alberta Agriculture, 1987. Fact Sheet, 4 pages.

Varieties of Perennial Hay and Pasture Crops for Alberta

(Agdex 120/32) Alberta Agriculture, 1988. Fact Sheet, 8 pages.

Vegetable Production in Alberta

(FS 000-21) Alberta Agriculture, 1986. Fact Sheet, 3 pages.

Wheat Production in Alberta

(FS 000-6) Alberta Agriculture, 1986. Fact Sheet, 3 pages.

YEAR THREE – SURVEY: *What Is Agriculture?*

Note: This unit is to be offered here only if students are entering the course at year three.

Overview

This required unit should be offered to students within the first year of their program. The intent of the unit is to provide a comprehensive overview of agricultural activity, providing students with a sense of its diversity and scope. The perspective adopted within this unit is that agricultural activity involves much more than the rural farm and that the impact of agriculture pervades all of society. The unit examines agriculture at a variety of levels from local to global and introduces students to Alberta's role as both an importer and an exporter of agricultural commodities.

This survey unit should follow the Theme 1 unit as many of the key ideas and skills can be drawn from the Theme 1 case study.

Objectives

Note: See Year One Program (page 19) for listing of concepts, skills and attitudes. A topic outline with student activities is on page 20. A listing of authorized learning resources follows on page 23.

YEAR THREE – THEME 2: TECHNOLOGY AND RESEARCH

Biotechnology Case Study

Overview

The production of high quality animal and plant products requires genetic strains that respond well to the conditions of production. In part, this is a matter of efficiency: only those breeds that can make the most effective use of nutrients available and that will produce the highest quality product will compete well in the marketplace. In many cases, it is also a matter of health and survival. Increased use of intensive farm production, often based on raising a single crop or breed, has led to increased susceptibility to disease and to pests. Resistant varieties must be developed to keep pace with increasingly intensive farm production practices.

This unit examines the application of biotechnology to large animal production. A variety of practices are considered, including those practices that are used in developing high quality stock and those that are aimed at enhancing the growth and development of existing breeds.

Objectives

Note: Objectives have been written in terms of an animal study but may be adapted to suit a plant study.

Concepts

Students will develop an understanding of each of the following concepts:

- breeds and varieties
- genetic characteristics
- principles of animal breeding
- artificial insemination and embryo transplants
- growth supplements and food additives
- hormones
- biotechnology.

Skills

Students will acquire skills in:

- observing animals (or pictures of animals) and interpreting their particular characteristics (e.g., size, shape, muscle development, fat cover)
- comparing strengths and weaknesses of different breeds
- identifying desirable characteristics
- identifying risks and benefits of using specialized breeds.

Attitudes

Students will develop the following attitudes:

- respect for animal welfare
- awareness of the role of research and biotechnology in agricultural industries
- awareness of the complex and multifaceted nature of large animal production
- awareness and appreciation of opportunities for careers in biotechnology and veterinary science
- awareness of potential effects of new technologies.

Example Topic: Animal Production Technology (Beef)

Topic Outline	Suggested Student Activities	Authorized Learning Resources
1. Production: what is desired? 2. Varieties and breeds 3. Reproduction and breeding	Students: • discuss consumer demands for high quality beef, identify characteristics that are desired in beef cattle (e.g., lean carcass, rapid growth, disease resistance) • identify the many kinds of products for which beef cattle are used; include both food and non-food uses • describe, draw or make models of what the ideal beef cattle would be like • read about, view and discuss the variety of breeds of beef cattle and compare data regarding their relative strengths and weaknesses • discuss the need for specialized breeds • read about, view and discuss problems that may arise in beef production; identify ways in which breed development might reduce or eliminate those problems • identify diseases and ailments to which cattle are particularly prone; identify cattle breeds that have greater or lesser resistance to these ailments * identify breeds of cattle that are particularly suited to specialized conditions * hear a guest speaker describe cattle breeds and the need for particular breed characteristics • read about or view media materials that describe general principles of cattle breeding * apply concepts and skills to a practical problem in breeding; i.e., develop a plan for breeding to produce some particular characteristic in an animal population	<i>"Beef Grading and Inspection" and "Good Things Come from Cattle" from Canada is Cattle Country</i> Note: For Teacher Reference <i>Alberta Cattle for Superior Performance Beef Cattle in Alberta</i>

- Key Activities
- * Alternative and Extension Activities

YEAR THREE – THEME 2

Biotechnology Case Study

Example Topic: Animal Production
Technology (Beef)

Topic Outline	Suggested Student Activities	Authorized Learning Resources
3. (continued)	Students: * discuss problems that may occur as unintended results of intensive breeding programs • read about or view materials that describe the care of cows and calves * visit a cow-calf farm operation	<i>Canada is Cattle Country</i>, pages 14-17 Note: For Teacher Reference
4. Canada's role in biotechnology	• read about and discuss Canada's role as a leader in biotechnology • identify plant and animal breeds that have been developed in Canada and are now used worldwide • discuss Canada's special needs for breed development to suit its northern climate	<i>Improving the Odds</i>
5. Enhanced breeding technologies	• read about and view techniques for artificial insemination and in vitro fertilization and embryo transfer • read about or view media that introduce new genetic technologies and technologies currently under research; discuss the possibilities for future breed development	<i>Farming for the Future: Progress Report</i> Note: For Teacher Reference
6. Growth supplements, hormones and medicines	• read about, view and discuss the use of growth supplements • identify the kinds of treatments that cattle may have, to ensure rapid growth * collect and examine sample rations used for cattle * compare the content of different animal rations • identify the kinds of treatments used to prevent or control disease	<i>Beef Seed Stock</i>

- Key Activities
- * Alternative and Extension Activities

Topic Outline	Suggested Student Activities	Authorized Learning Resources
7. Issues and controversies	Students: ● read about or view materials that identify concerns regarding residual effects of treatments and additives in finished meat products; identify standards that must be met to avoid danger to human health * debate the merits of hormone use to increase milk production ● discuss questions of ownership: should a person who has developed a new breed have some kind of ownership of that breed? ● discuss questions regarding concentrating production in very specialized breeds: who will maintain a basic stock of past breeds?	

- Key Activities
- * Alternative and Extension Activities

YEAR THREE – THEME 2: AUTHORIZED LEARNING RESOURCES

Example Topic: Animal Production Technology (Beef)

RECOMMENDED LEARNING RESOURCES

None identified

SUPPLEMENTARY LEARNING RESOURCES

Alberta Cattle for Superior Performance

(Agdex 420/32-1) Alberta Agriculture, 1986. Pamphlet, 20 pages.

Beef Cattle in Alberta

(FS 000-17) Alberta Agriculture, 1986. Fact Sheet, 4 pages.

Beef Seed Stock

(No. 427) T.A.H.L. Commercial Film, 1983. 16 mm Film or 1/2" VHS Videotape, 10 minutes.

Canada is Cattle Country

The Beef Information Centre, 1984. Set of Lessons, 35 pages.

Note: For Teacher Reference.

Farming for the Future: Progress Report

Alberta Agriculture Research Council of Alberta, 1987. Booklet, 47 pages.

Note: For Teacher Reference.

Improving the Odds

(No. 392 VT) Alberta Agriculture, 1982. 1/2" VHS or 3/4" Videotape, 28 minutes.

YEAR THREE – THEME 3: RESOURCE MANAGEMENT

Land Use

Overview

This unit examines the scope and implications of land use practices. It considers land uses within urban areas as well as rural areas, and it examines the basis on which land use decisions are presently made. Key issues are identified and consideration is given to alternatives for the future.

A main theme of the unit is that decisions regarding land use play a large part in determining the nature and extent of agricultural production. What land will be used for agricultural purposes and what crops will be raised are questions that are continually under review. Currently, decisions that are made on land use are based largely on economic and practical considerations as seen by the land holder, but increasingly the decisions are becoming a matter of public concern. Both technical and societal considerations will play increasing roles in future land use planning.

Objectives

Concepts

Students will develop an understanding of each of the following concepts:

- agricultural land use considerations
 - quality of soil
 - topography
 - water and climate
 - market value of products
 - costs of operation
 - experience and livelihood of landholder
- available technology
- other land use considerations
 - urbanization and industrialization
 - resource extraction needs (mining and drilling operations)
 - public concerns regarding environmental quality
 - maintenance of natural environments
- historical change in land use
- sustained yield
- stewardship.

Skills

Students will acquire skills in:

- classifying land uses
- interpreting topographical features on maps and aerial photos
- analyzing land use within a given area
- identifying land use issues
- evaluating alternative land uses
- interpreting a farmstead plan
- drawing a rough site plan for a city lot
- setting goals for land use in an area.

Attitudes

Students will develop the following attitudes:

- awareness of long-term impacts of land uses
- appreciation of the diversity of values that come into play in land use decisions
- value both the need for agricultural land and the need for natural environments
- awareness and appreciation of opportunities for careers in land use planning
- conservation ethic.

Topic Outline	Suggested Student Activities	Authorized Learning Resources
1. Assessment of potential land use 2. Planning in urban areas - planning and zoning - layout and landscaping within a site	Students: ● brainstorm potential uses of a vacant lot (based on an example piece of land within the community) ● brainstorm potential uses to which a local piece of farmland might be put: include agricultural uses and non-agricultural uses (e.g., recreational, wildlife preserve, industrial) ● rate the alternatives and provide a rationale for the ratings ● identify factors that determine land use in urban areas ● examine newspapers for items that deal with zoning and rezoning of properties ● discuss reasons for zoning and land use classification ● examine a neighbourhood plan; identify areas for housing, for transportation corridors, for community services and for parkland ● examine a city or town map that shows the overall zoning or land use classification plan for the city * review systems used to identify parcels of land: township plans and legal land descriptions * estimate the amount of green space per person and the amount of space covered by improvements of various kinds ● classify the green space within cities according to use; e.g., lawns, ornamental gardens, vegetable and fruit gardens, wooded areas, water and wetlands, farmland ● identify areas in the city plan devoted to industry; discuss why major industries are usually clustered together, but separate from residential areas * examine sample site and landscape plans for urban properties	<i>Urbanization of Agricultural Land: Summary</i>

- Key Activities
- * Alternative and Extension Activities

YEAR THREE - THEME 3

Land Use

Topic Outline	Suggested Student Activities	Authorized Learning Resources
2. (continued) 3. Planning in rural areas: farmstead planning - assessment of land - layout of farmstead	Students: ● prepare a plan for a background flower and/or vegetable garden ● design and/or model a landscape plan for a city lot ● identify factors that determine agricultural land use ● review soil assessment and its role in determining land use ● read about, view and discuss agricultural and non-agricultural land uses in the local area * hear a presentation on local land use practices (potential speakers include district agriculturists, agricultural services members, MD councillors) ● read about, view, and discuss the layout of farmsteads * visit a farmstead and make a map showing the layout of agricultural operations and farm improvements * construct a land use plan for a township	<i>A Proposed Study Package on Soil,</i> pages 1.1-1.10 Note: For Teacher Reference <i>Maintaining and Expanding the Agricultural Land Base in Alberta - Terms of Reference and Background Information,</i> pages 2-8 Note: For Teacher Reference <i>Agricultural Land Base in Alberta: Summary</i> <i>Shelterbelts</i>

- Key Activities
- * Alternative and Extension Activities

Topic Outline	Suggested Student Activities	Authorized Learning Resources
4. Competing land uses - farming versus non-agricultural land needs - selection of appropriate crops and livestock 5. Problems related to land use	Students: ● examine historical material regarding the local community; compare present land use in the local area to that of fifty years ago ● collect and discuss examples of land use controversies from newspapers and other media; identify the basis for positions taken by different groups ● read about and discuss land use practices that degrade agricultural land: overgrazing, overuse of available moisture and minerals, exposure to erosion, inappropriate irrigation practice, and removal of natural pest control organisms ● read about and view agricultural practices that alleviate or lessen these problems ● discuss the concept of sustained yield	<i>Maintaining and Expanding the Agricultural Land Base in Alberta – Summary Report and Recommendations</i> Note: For Teacher Reference "Agricultural Lands" in <i>Environment Views</i> "Soils and the Environment" in <i>Environment Views</i> <i>Maintaining and Expanding the Agricultural Land Base in Alberta – Terms of Reference and Background Information</i>, pages 13-14 Note: For Teacher Reference <i>Conservation Farming</i>, pages 70-81

- Key Activities
- * Alternative and Extension Activities

- Key Activities
- * Alternative and Extension Activities

YEAR THREE – THEME 3: AUTHORIZED LEARNING RESOURCES

Land Use

RECOMMENDED LEARNING RESOURCES

None identified

SUPPLEMENTARY LEARNING RESOURCES

Agricultural Land Base in Alberta: Summary

(ECA81-17/IB7) Thompson, Peggy. Environment Research Council of Alberta, 1981. Booklet, 12 pages.

"Agricultural Lands", in Environment Views

Volume Five, Number Six, November/December 1982, Alberta Environment. Periodical, 32 pages.

Note: For Teacher Reference.

Conservation Farming

Hughes, Harold A. John Deere & Company, 1980. Book, 150 pages.

"Land Reclamation", in Environment Views

Volume Three, Number Seven, April/May 1981. Alberta Environment. Periodical, 36 pages.

Maintaining and Expanding the Agricultural Land Base in Alberta – Summary Report and Recommendations

(ECA 82-17/IB18) Environment Council of Alberta, 1984. Booklet, 37 pages.

Note: For Teacher Reference.

Maintaining and Expanding the Agricultural Land Base in Alberta – Terms of Reference and Background Information

(ECA 82-17/RR1) Thompson, Peggy S. Environment Council of Alberta, 1982. Booklet, 24 pages.

Note: For Teacher Reference.

A Proposed Study Package on Soil

Canadian Society of Environmental Biologists, Alberta Chapter, 1985. Set of Lessons, 114 pages.

Note: For Teacher Reference.

Shelterbelts

(No. 291) Alberta Agriculture, 1984. 16 mm Film, 19 minutes.

"Soils and the Environment", in Environment Views

Volume Three, Number Six, February/March 1981. Alberta Environment, Periodical, 32 pages.

This Borrowed Land

(NFB 106C 0184 064) National Film Board of Canada and Pacific Region Productions, 1984. 16 mm Film, 28 minutes.

Urbanization of Agricultural Land: Summary

(ECA81-17/IB11) Thompson, Peggy S. Environment Council of Alberta, 1981. Booklet, 10 pages.

CHAPTER

5



OPTIONAL UNITS

OPTIONAL UNITS – INTRODUCTION

Teachers may complete the program by offering a number of optional units selected from the list below. These units provide opportunities for students to pursue areas of interest. Optional units may also serve to provide added focus on local agricultural practices or to broaden students' understanding of agriculture. A minimum of six hours instructional time is recommended for each optional unit.

At each level of the program, students may also study a local interest topic not included in the following list.

1. Agriculture and Human History
2. Agricultural Horizons: An Examination of Agriculture Around the World
3. Agricultural Services
4. Animal Care
5. Beekeeping
6. Cattle
7. Computers and Agriculture
8. Crop Protection
9. Farming and Wildlife
10. Forage Crop Production
11. Fruit Crops
12. Fur Farming
13. Hogs
14. Home Gardening and Food Production
15. Horses
16. Imports and Exports
17. Indoor Gardening
18. Irrigation
19. Landscape and Trees
20. Marketing and Advertising
21. Market Gardening
22. Marketing Systems
23. Mushroom Farming
24. Oilseed (Canola)
25. Planning and Finances: The Business Side of Farming
26. Poultry
27. Processing and Preserving
28. Research and Technologies
29. Sheep and Goats
30. Sugar
31. Transportation
32. Trapping
33. Tree Farming
34. Weather and Crop Management

UNIT OUTLINES AND AUTHORIZED LEARNING RESOURCES

The following outlines provide a suggested development for each of the optional units. Most of the learning resources identified have been granted supplementary status. The Appendix contains further information for obtaining supplementary learning resources.

1. Agriculture and Human History

- the emergence of agriculture
- early techniques and practices
- the effects of agriculture on historical development
 - locations and patterns of human settlement
 - population
 - trade and commerce
- invention, innovation and mechanization
- current practices
- standard of living and lifestyle

Recommended Learning Resource:

Space Age Agriculture: Land and Life

Brodeur, Cathy, and Peterson, Cole. Alberta Agriculture, 1988. Teacher Handbook, pages A85 - A122.

Note: For Teacher Reference.

Supplementary Learning Resource:

Men, Machines and Land

Farm and Industrial Equipment Institute, 1974. Book, 73 pages.

2. Agricultural Horizons: An Examination of Agriculture Around the World

- food and culture: what is considered food?
- quality and quantity of food consumption: what do others eat?
- production practices
- resources
- mechanization
- global food supply
- international roles of Alberta and Canada

Supplementary Learning Resource:

Feeding the World

Fyson, Nance Lui. B.T. Batsford Ltd., London, 1984. Book, 72 pages.

3. Agricultural Services

- primary, secondary and service industries
- extent of farm service industries
- study of example services
 - equipment and machinery
 - supplies
 - transportation and marketing
 - services to farm families

Supplementary Learning Resources:

None identified

4. Animal Care

- types of animals: pets, working animals, livestock and wildlife
- varieties, genetics and breeding
- example study
 - characteristics
 - growth
 - environmental needs
 - health needs and care
 - humane considerations

Supplementary Learning Resources:

Animal Health and Its Relationship to Our World, Unit III, 4-H 133, 4-H Veterinary Science
Rice, Duane. Nebraska Cooperative Extension Service, 1987. Booklet, 23 pages.

The Normal Animal, Unit I, 4-H Veterinary Science
Rice, Duane. Nebraska Cooperative Extension Service, 1987. Booklet, 48 pages.

Raising Meat Rabbits in Alberta
(Agdex 476/20-1) Briarpatch Farms Ltd., Alberta Agriculture, 1984. Booklet, 58 pages.

5. Beekeeping

- bees: characteristics and life cycles
- culture and care of bees
- hive location, environments, and bee forage
- harvesting and processing of honey
- hive management and safety considerations

Supplementary Learning Resources:

The Bee

(No. 616-11) Time-Life Films, 1975. 16 mm Film, 25 minutes.

Beekeeping in Alberta

(FS 000-18) Alberta Agriculture, 1986. Fact Sheet, 2 pages.

Build Your Own Pollen Trap

(Agdex 616-22) Engineering Branch, Alberta Agriculture, 1985. Pamphlet, 4 pages.

6. Cattle

- types, genetics, breeding
- production
- products
- health and care
- economic aspects
- related industries

Supplementary Learning Resources:

Beef Cattle in Alberta

(FS 000-17) Alberta Agriculture, 1986. Fact Sheet, 4 pages.

Canada is Cattle Country

The Beef Information Centre, 1984. Set of Lessons, 35 pages.

Note: For Teacher Reference.

Forage Crops in Alberta

(FS 000-12) Alberta Agriculture, 1986. Fact Sheet, 4 pages.

Know More About Cattle

Beef Information Centre, no date. Pamphlet, 6 pages.

Nutrients for Cattle

(Agdex 400/50-3) Alberta Agriculture, 1986. Fact Sheet, 4 pages.

Note: For Teacher Reference.

Sunchanger

(No. 400-9) Elanco Division of Eli Lilly, 1978. 16 mm Film, 12 minutes.

7. Computers and Agriculture

- application to planning and farm management
 - accessing and use of data bases
 - record keeping
 - financial planning
 - planning for the future

- application to automated mechanical systems
 - monitoring, feedback and control systems
 - computerization in existing mechanical systems
 - design and function of future systems

Supplementary Learning Resource:

Computers and the Farm Operation: A Selective Bibliography

Nussbaumer, Allison. Alberta Agriculture, 1987. Pamphlet, 7 pages.

Note: For Teacher Reference.

8. Crop Protection

- insects: damage, reproduction, population growth
- plant diseases
- abiotic factors
- weeds
- herbicides and pesticides

Supplementary Learning Resources:

Conservation Farming

Hughes, Harold A. John Deere & Company, 1980. Book, 150 pages.

Controlling Weeds

(FS 640-5) Alberta Agriculture, 1981. Fact Sheet, 4 pages.

Pest Wars

(No. 685) Alberta Agriculture, 1984. 16 mm Film, 1/2" VHS or 3/4" Videotape, 28 minutes.

Pesticides: Something to Think About

Christian Farmers Federation, 1985. Booklet, 19 pages.

Note: For Teacher Reference.

Preventing Bird Damage to Prairie Crops

(Agdex 685-4) Canadian Wildlife Service, 1982. Pamphlet, 19 pages.

Weed Seedling Identification

(Agdex 640-3) Alberta Agriculture, 1986. Booklet, 25 pages.

9. Farming and Wildlife

- habitat alteration
 - wetlands
 - forests
- competition for food
- wildlife or pests
- game farming
- harvesting native plants

Supplementary Learning Resources:

Preventing Bird Damage to Prairie Crops

Canadian Wildlife Service, 1982. Pamphlet, 19 pages.

Wildlife Habitat: A Handbook for Canada's Prairies & Parklands

Canadian Wildlife Service, Environment Canada, 1981. Booklet, 51 pages.

10. Forage Crop Production

- types, genetics, breeding
- nutritional assessment
- production
- harvesting, processing and storage
- economic aspects

Supplementary Learning Resources:

Forage Crops in Alberta

(FS 000-12) Alberta Agriculture, 1986. Fact Sheet, 4 pages.

Forage Harvesting and Handling Systems

(FS 745-6) Alberta Agriculture, 1983. Fact Sheet, 12 pages.

Pasture Management

(No. 135) Alberta Agriculture, 1984. 16 mm Film or 1/2" VHS Videotape, 24 minutes.

Principles of Pasture Management

(FS 130/10-1) Alberta Agriculture, 1977. Fact Sheet, 4 pages.

Note: For Teacher Reference.

Sunchanger

(No. 400-9) Elanco Division of Eli Lilly, 1978. 16 mm Film, 12 minutes.

Varieties of Annual Forage Crops for Alberta 1987

(FS 120/32-1) Alberta Agriculture, 1987. Fact Sheet, 4 pages.

Varieties of Perennial Hay and Pasture Crops for Alberta

(Agdex 120/32) Alberta Agriculture, 1988. Fact Sheet, 8 pages.

11. Fruit Crops

- types and varieties
- growth forms
- production
- packaging and processing of fresh fruits
- production and processing of preserved products

Supplementary Learning Resources:

Bush Fruits in Alberta

(FS 230/20-2) Alberta Agriculture, 1979. Fact Sheet, 9 pages.

University of Alberta Home Gardening Course

Harapiah, John. Faculty of Extension, University of Alberta, 1986.
Book, 1250 pages.

Note: For Teacher Reference.

12. Fur Farming

- types
- breeding
- health, feeding and care
- processing and preparing furs
- trapping and conservation issues

Supplementary Learning Resources:

None identified

13. Hogs

- types, genetics, breeding
- production
- products
- health and care
- economic aspects
- related industries

Supplementary Learning Resource:

Pork Production in Alberta

(FS 000-14) Alberta Agriculture, 1986. Fact Sheet, 3 pages.

14. Home Gardening and Food Production

- garden environments: what conditions are important?
- soil assessment, enhancement and maintenance
- gardening techniques
- selecting crops; characteristics and needs of common garden plants
- selecting varieties, interpreting the supplier's information
- planning and laying out the garden
- getting an early start: hotbeds and coldframes
- crop protection
- harvesting, storage and preservation of garden crops
- alternative approaches to gardening

Supplementary Learning Resources:

Gardening on the Prairies: The Complete Guide to Canadian Prairie Gardening

Vick, Roger. Western Producer Prairie Books, 1987. Book, 246 pages.

Note: For Teacher Reference.

University of Alberta Home Gardening Course

Harapiah, John. Faculty of Extension, University of Alberta, 1986.

Book, 1250 pages.

Note: For Teacher Reference.

Vegetable Production In Alberta

(FS 000-21) Alberta Agriculture, 1986. Fact Sheet, 3 pages.

15. Horses

- characteristics and structure
- types, genetics, breeding
- uses: work, pleasure, sport
- growth
- care and training
- marketing

Supplementary Learning Resources:

Alberta Horses

Marketing Sector, Alberta Agriculture, 1987. Pamphlet, 6 pages.

Horse Management: Feeding

(Agdex 460/50-1) Alberta Agriculture, 1987. Booklet, 28 pages.

Note: For Teacher Reference.

Horses in Alberta

(FS 000-26) Alberta Agriculture, 1986. Fact Sheet, 2 pages.

Parasites of Horses

(Agdex 460/661-1) Alberta Agriculture, 1983. Fact Sheet, 5 pages.

Note: For Teacher Reference.

16. Imports and Exports

- food as a global resource
 - where does our food come from?
 - what foods do we import?
 - why do we import some foods rather than produce our own?
 - Alberta exports
 - what products does Alberta produce that are surplus to our needs?
 - what countries have need of products produced in Alberta?
 - what is exported?
 - where do the products go?
- transportation and shipping

Supplementary Learning Resources:

None identified

17. Indoor Gardening

- household plants: needs, monitoring and maintenance
- artificial environments for meeting plant needs
 - greenhouses
 - artificial lighting
 - hydroponics
- selecting plants; familiarity with some common plants
- floriculture

Supplementary Learning Resource:

University of Alberta Home Gardening Course

Harapiah, John. Faculty of Extension, University of Alberta, 1986.

Book, 1250 pages.

Note: For Teacher Reference.

18. Irrigation

- needs
- planning: large and small scale
- equipment
- irrigation in Alberta
- special problems: changes in drainage salinization and patterns
- economics

Supplementary Learning Resources:

Irrigation Agriculture in Alberta: Summary

(ECA 81-17/189) Sanderson, Kim. Environment Council of Alberta, 1982.

Booklet, 10 pages.

Irrigation in Alberta

(Agdex 560-1) Alberta Agriculture, 1985. Booklet, 10 pages.

Note: For Teacher Reference.

The Magic of Water

(No. 753) Century Films, 1975. 16 mm Film, 27 minutes.

19. Landscape and Trees

- lawns and turf
- trees and shrubs
- pruning, grafting, budding, thinning
- selection of appropriate varieties
- design

Supplementary Learning Resources:

Landscaping Alberta Yards

(Agdex 271/17-2) Casement, E.B. Alberta Agriculture, 1988. Booklet, 23 pages.

Planting Farm, Field & Roadside Shelterbelts in Alberta

(Agdex 276/22) Alberta Agriculture, 1981. Pamphlet, 6 pages.

Shelterbelts

(No. 291) Alberta Agriculture, 1984. 16 mm Film, 19 minutes.

Transplanting Alberta Trees & Shrubs

(Agdex 275/22-1) Grainger, G. Alberta Agriculture, 1985. Booklet, 28 pages.

University of Alberta Home Gardening Course

Harapiah, John. Faculty of Extension, University of Alberta, 1986.
Book, 1250 pages.

Note: For Teacher Reference.

20. Marketing and Advertising

- the consumer: wants and needs
- processing and packaging to appeal to the consumer
 - convenience foods
 - package appeal
- advertising strategies
 - examples and principles
 - making advertisements
- being an intelligent consumer
 - food value and price value
 - packaging costs and product costs

Supplementary Learning Resources:

None identified

21. Market Gardening

- markets and market preferences
- choice of varieties for production
- seasonal production
- intensive production practices
 - mechanical and hand labour
 - specialized equipment and skills
 - crop protection
- preparing and packaging products
- pricing and marketing

Supplementary Learning Resources:

Market Gardening in Alberta

Alberta Agriculture, 1986. Fact Sheet, 1 page.

Vegetable Production in Alberta

(FS 000-21) Alberta Agriculture, 1986. Fact Sheet, 3 pages.

22. Marketing Systems

- direct sales
- local, provincial, national and international markets
- need for marketing systems
- marketing agencies: cooperatives, free markets, marketing boards and government
- quotas and subsidies
- assessing and regulating quality of products

Supplementary Learning Resource:

Cattle Option

(No. 415) Alberta Agriculture, 1986. 16 mm Film or 1/2" VHS Videotape, 16 minutes.

23. Mushroom Farming

- characteristics and life cycle of mushrooms
- natural occurrence
- culture and growth
- species control and safety
- growth environments
- production, packaging and marketing

Supplementary Learning Resources:

None identified

24. Oilseed (Canola)

- plant varieties, characteristics
- crop production
- harvesting
- processing, distribution and marketing of oil as food
- non-food products and uses

Supplementary Learning Resources:

Canola Canada

(No. 144VT) Alberta Agriculture, 1984. 16 mm Film or 3/4" Videotape, 9 minutes.

Canola Production in Alberta

(Agdex 149/20-1) Alberta Agriculture, 1987. Booklet, 31 pages.

Note: For Teacher Reference.

Canola Production in Alberta

(FS 000-9) Alberta Agriculture, 1986. Fact Sheet, 4 pages.

Canola Production on the Prairies

Alberta Agriculture, 1985. 16 mm Film or 1/2" VHS Videotape, 17 minutes.

25. Planning and Finances: The Business Side of Farming

- simulated farming: case study
- records: physical and financial resources
- budgets
- costs and usage of land
- decision making
- computer applications

Supplementary Learning Resources:

Developing a Farm Office Procedure

(FS 818-17) Farm Business Management Branch, Alberta Agriculture, 1983. Fact Sheet, 4 pages.

Farm Office Fit It All Together

(Homedex 1830-10-1) Jackson, Pauline. Home Economics Branch, Alberta Agriculture, 1986. Booklet, 39 pages.

26. Poultry

- types, genetics, breeding
- production
- products
- health and care
- economic aspects
- related industries

Supplementary Learning Resources:

Managing a Small Duck Flock

(Pub 1524) Agriculture Canada, 1982. Booklet, 11 pages.

Marketing Alberta Eggs/How Farmers Market Eggs in Alberta

Alberta Egg and Fowl Marketing Board, 1982. Folder, 6 pages.
Canadian Federation of Agriculture, 1982. Booklet, 28 pages.

Poultry Production in Alberta

(Agdex 450-20-1) Alberta Agriculture, 1983. Booklet, 22 pages.

Poultry Production in Alberta

(FS 000-16) Alberta Agriculture, 1986. Fact Sheet, 3 pages.

27. Processing and Preserving

- spoilage and shelf life
- refrigeration and freezing
- sterilization and canning
- drying
- irradiation
- chemical additives
- preservation projects
- past and future techniques

Supplementary Learning Resources:

Food Drying: A Beginner's Guide

(Agdex 1157-1) Alberta Agriculture, 1985. Booklet, 24 pages.

Freezing Foods

(Homedex 1560/E) Agriculture Canada, 1985. Booklet, 35 pages.

Home Canning of Meat and Poultry

(Homedex 1151-30) Alberta Agriculture, 1985. Booklet, 23 pages.

Jams, Jellies and Other Preserves

(Homedex 1152) Agriculture Canada, 1985. Booklet, 19 pages.

Pickles and Relishes

(Homedex 1153-1) Agriculture Canada, 1985. Booklet, 23 pages.

28. Research and Technologies

- species development
- improvements in monitoring and measuring
- improvements in environmental controls
- mechanization
- current areas of research
- apprentice research project

Supplementary Learning Resources:

An Analysis of Agricultural Research and Productivity in Alberta

(ECA 81-17/185) Marv Anderson & Associates for Environment Council of Alberta, 1983. Book, 163 pages.

Note: For Teacher Reference.

Farming for the Future: Progress Report

Alberta Agriculture Research Council of Alberta, 1987. Booklet, 47 pages.

Note: For Teacher Reference.

The Kids' Whole Future Catalog

Taylor, Paula. Random House, New York, 1982. Book, 254 pages.

Weather Modification in Alberta: Summary Report and Recommendations

Alberta Research Council, 1986. Booklet, 18 pages.

Note: For Teacher Reference.

29. Sheep and Goats

- types, genetics, breeding
- production
- health and care
- economic aspects
- related industries

Supplementary Learning Resources:

Alberta Sheep Production Manual

(Agdex 430/20-1) Sheep and Goat Section, Alberta Agriculture, 1987.

Book, 100 pages.

Note: For Teacher Reference.

Sheep Production in Alberta

(FS 000-15) Alberta Agriculture, 1986. Fact Sheet, 3 pages.

Wool and Sheepskins

(Agdex 430/83-1) Handy, Kelly. Alberta Agriculture, 1987. Book, 119 pages.

30. Sugar

- sugar and energy
- sugar beets
 - irrigation
 - production
 - processing
- sugar cane
- international production and marketing

Supplementary Learning Resources:

None identified

31. Transportation

- farm needs and products
- fertilizers and chemicals
- livestock and feed
- perishable foodstuffs
- long and short distance transportation
- economics of production and distance to markets

Supplementary Learning Resources:

Alberta Wheat Pool Terminal Operations

Alberta Wheat Pool, no date. Pamphlet, 5 pages.

Energy Use for Farm Trucking in Alberta

(Agdex 826-1) Birch, Alfred, and G. Nabi Chaudhary. Economic Services Division, Alberta Agriculture, 1983. Booklet, 40 pages.

Men, Machines and Land

Farm and Industrial Equipment Institute, 1974. Book, 73 pages.

32. Trapping

- history and development of fur industry
- fur bearing animals
- humane trapping
- equipment
- safety considerations
- trapline preparation and management
- preparing and processing furs
- conservation and protection issues

Potential Learning Resource:

Trapping and Conservation Manual

Field Services Division, Alberta Advanced Education and Fish and Wildlife Division, Alberta Forestry, Lands and Wildlife.

Note: A new (fifth) edition is being prepared, and is expected to be reviewed in the fall of 1989. Schools will be notified when the review is completed if authorized status is granted.

33. Tree Farming

- land suitability and location
- conservation considerations
- products and markets
- varieties and growth characteristics
- preparation, planting and care

Supplementary Learning Resources:

None identified

34. Weather and Crop Management

- frost and crop damage
- effects of too much and too little moisture
- hail and hail damage
- weather modification
- crop management practices
- personal health and weather (rain, dust, heat and sunlight)

Supplementary Learning Resources:

Alberta Hail Project

(No. 303-1) Douglas Film Group/Alberta Weather Modification Board, 1978.
16 mm Film, 22 minutes.

Coping with the Effects of Weather on Agriculture

(FS 075-3) Alberta Agriculture, 1984. Fact Sheet, 4 pages.

"Drought", in Environment Views

Volume Eight, Number Six, Spring 1986. Alberta Environment. Periodical, 32 pages.

Patterns of Climate

(ACCESS Network No: VC 249603) North America: Growth of a Continent Series,
TV Ontario, 1980. 1/2" VHS Videotape, 15 minutes.

Vegetation and the Soil

(ACCESS Network No: VC 249604) North America: Growth of a Continent Series,
TV Ontario, 1980. 1/2" VHS Videotape, 15 minutes.

Weather Modification in Alberta: Summary Report and Recommendations

Alberta Research Council, 1986. Booklet, 18 pages.

Note: For Teacher Reference.

Weather Picture

(No. 304) Alberta Agriculture, 1984. 16 mm Film, 1/2" VHS or 3/4" Videotape,
27 minutes.

CHAPTER

6



LEARNING RESOURCES

DEFINITIONS

Learning resources fall into three categories: basic, recommended and supplementary. In terms of provincial policy, learning resources are those print, nonprint and electronic software materials used by teachers or students to facilitate teaching and learning.

BASIC LEARNING RESOURCES

Basic learning resources are those learning resources approved by Alberta Education as the most appropriate for meeting the majority of goals and objectives of courses, or substantial components of courses outlined in the provincial programs of studies.

AND

Those productivity software programs (e.g., word processors, spread sheets, data bases, integrated programs) approved by Alberta Education that can be used to achieve important objectives across two or more grade levels, subject areas, or programs.

Note: No learning resources have been authorized as basic for the Junior High Agriculture: Land and Life Program.

RECOMMENDED LEARNING RESOURCES

Recommended learning resources are those learning resources approved by Alberta Education because they complement basic learning resources by making an important contribution to the attainment of one or more of the major goals of courses outlined in the provincial programs of studies.

The two learning resources with recommended status are available for purchase from the Learning Resources Distributing Centre. The L.R.D.C. order numbers are noted for each title. Check the L.R.D.C. Buyers Guide for current prices.

Space Age Agriculture: Land and Life

Brodeur, Cathy, and Peterson, Cole

Pub: Alberta Agriculture, 1988

Teacher Handbook, 318 pages

This teacher handbook was developed by Alberta Agriculture to support portions of the Agriculture: Land and Life Program. The handbook includes lesson plans, notes on teaching strategies, and general information about the agriculture industry. Instructional activities in this learning resource apply mainly to the first two themes of the Year One Program, but the information sections included apply to units throughout the program.

Year One – Theme 1; Year One – Survey; Year One – Theme 2; Year Two – Theme 1; Year Three – Theme 1; Option 1 – Agriculture and Human History

L.R.D.C. Order Number: 0AG07001

Note: For Teacher Reference

Water and Agriculture

Pub: Alberta Environment, 1988

Kit, Components include Student Book (33 pages), Teacher's Guide, Activity Sheet Masters, Overhead Projector Masters, Masters for Posters

This learning resource is in the form of a kit which has been developed to support the water theme of the Year One Agriculture: Land and Life Program. The kit includes a teacher guide, 30 student booklets, a set of activity masters, a set of transparency masters and a set of poster masters. Learning activities in this resource are outlined in detail and are extensively supported by the student materials.

Year One – Theme 3

L.R.D.C. Order Numbers:

Student Book	-	0AG07002
Teacher's Guide	-	0AG07003
Overhead Projector Masters	-	0AG07004
Activity Sheet Masters	-	0AG07005
Masters for Posters	-	0AG07006

SUPPLEMENTARY LEARNING RESOURCES

Supplementary learning resources are those learning resources approved by Alberta Education because they support courses outlined in the provincial programs of studies by enriching or reinforcing the learning experience.

Supplementary learning resources are NOT stocked at the Learning Resources Distributing Centre. The following annotated alphabetical listing of resources provides information including source. The Appendix provides an alphabetical listing of sources with addresses and ordering information. Please note that some resources are authorized for more than one theme and/or option, and that this information is noted following the resource description.

Across Canada: Resources and Regions, Second Edition

Note: Chapter 5 only

Hammell, Christine, and Robert Harshman

Pub: John Wiley & Sons Canada Limited, 1987

Hardcover Book, 332 pages

Chapter five of this social studies textbook provides an overview of farming in Canada. The chapter includes sections on the history of agriculture in Canada, the importance of agriculture and the distribution of agricultural practices throughout the country.

Note: The first edition (1980) was granted Basic status for social studies, Grade 9 Topic C, in 1981-82. This second edition is presently under review for the Revised Junior High Social Studies Program.

Year One – Survey

Source: John Wiley & Sons Canada Limited

Agricultural Land Base in Alberta: Summary

(ECA81-17/IB7)

Thompson, Peggy

Pub: Environment Research Council of Alberta, 1981

Booklet, 12 pages

This readable and well illustrated booklet covers soil characteristics, distribution, climate, land classification, land uses, and future considerations of Alberta's agricultural lands.

Year Three – Theme 3

Source: Environment Council of Alberta

"Agricultural Lands", in Environment Views

Volume Five, Number Six, November/December, 1982

Pub: Alberta Environment

Periodical, 32 pages

This issue deals with agricultural lands from various viewpoints, with the aim of increasing Albertans' awareness of environmental issues.

Year Three – Theme 3

Source: Alberta Environment, Communications Branch

Note: For Teacher Reference

Agriculture and the Environment

(ECA 81-17/1B5)

Sanderson, Kim

Pub: Environment Council of Alberta, 1981

Booklet, 58 pages

This booklet discusses the effects of modern agricultural practices on the environment, as well as industrial and urban factors affecting agriculture. Background information on Summary Report, 1982, is included.

Year One – Theme 3

Source: Environment Council of Alberta

Note: For Teacher Reference

Agriculture and the Environment: Summary

(ECA82-17/1B14)

Sanderson, Kim

Pub: Environment Council of Alberta, 1982

Booklet, 10 pages

This is a summary of the effects of modern agricultural practices on the environment. The booklet, which is well illustrated, provides suitable reading at the junior high level.

Year One – Theme 3; Year Two – Theme 3

Source: Environment Council of Alberta

Note: For Teacher Reference

Agriculture in Alberta

(Agdex 000-25)

Pub: Alberta Agriculture, 1988

Booklet, 32 pages

This illustrated booklet shows the diversity of agricultural activities in Alberta, including economics, history, the land base, processing industries, research, and products. It is readable at the high school level.

Year One – Survey; Year Three – Theme 1

Source: Alberta Agriculture, Print Media Branch

Air Seeders

(Agdex 768)

Producer: Prairie Agricultural Equipment Institute, 1983

16 mm Film, 10 minutes

This short film discusses the use, and gives an evaluation of pneumatic air seeders. The film is a good example of applied technology.

Year One – Theme 2

Source: Alberta Agriculture, Film Library

Alberta Agricultural Statistics Fact Sheet

(Agdex 853)

Statistics Branch

Pub: Alberta Agriculture, 1988

Pamphlet, 5 pages

This publication provides financial statistics on: farm values, depreciations and operating expenses, incomes, and cash receipts; production of various crops, livestock and honey; and out of province shipments and exports.

Year One – Survey

Source: Alberta Agriculture, Print Media Branch

Alberta Cattle for Superior Performance

(Agdex 420/32-1)

Pub: Alberta Agriculture, 1986

Pamphlet, 20 pages

This pamphlet describes breeds, breeding, research, and exports of cattle and semen, and contains some good photos of cattle breeds.

Year One - Theme 1; Year Three - Theme 2

Source: Alberta Agriculture, Print Media Branch

Alberta Hail Project

(No. 303-1)

Producer: Douglas Film Group/Alberta Weather Modification Board, 1978

16 mm Film, 22 minutes

This film shows how supercooled water in a storm cloud can form into devastating hailstones. It describes cloud seeding methods and research by the Alberta Weather Modification Board.

Option 34 - Weather and Crop Management

Source: Alberta Agriculture, Film Library

Alberta Horses

Pub: Marketing Sector, Alberta Agriculture, 1987

Pamphlet, 6 pages

This pamphlet contains some good photographs and descriptions of the breeds of horses bred in Alberta.

Option 15 - Horses

Source: Alberta Agriculture, Marketing Services Division

Alberta Sheep Production Manual

(Agdex 430/20-1)

Pub: Sheep and Goat Section, Alberta Agriculture, 1987

Book, 100 pages

This book is a good reference to sheep production.

Option 29 - Sheep and Goats

Source: Alberta Agriculture, Print Media Branch

Note: For Teacher Reference

Alberta Wheat Pool Terminal Operations

Pub: Alberta Wheat Pool, no date

Pamphlet, 5 pages

The west coast grain handling facilities owned and operated by the Alberta Wheat Pool are described in this pamphlet.

Option 31 - Transportation

Source: Alberta Wheat Pool

Alberta's Food Products

(Agdex 1100-60)

Pub: Marketing Section, Alberta Agriculture, 1985

Booklet, 20 pages

This booklet provides a list of Alberta food processors and their locations in the province. It gives an appreciation of the diversity of agribusiness and contains ideas for field trips to local businesses.

Year One - Survey

Source: Alberta Agriculture, Print Media Branch

An Analysis of Agricultural Research and Productivity in Alberta

(ECA 81-17/IB5)

Pub: Marv Anderson & Associates for Environment Council of Alberta, 1983

Book, 163 pages

An economic analysis of acceptance of new technology in agriculture, the book contains sources of information most used by farmers (page 18); along with tables and graphs showing changes in productivity with new innovations (pages 33-50).

Option 28 – Research and Technologies

Source: Environment Council of Alberta

Note: For Teacher Reference

Animal Health and Its Relationship to Our World, Unit III, 4-H 133, 4-H Veterinary Science

Rice, Duane

Pub: Nebraska Cooperative Extension Service, 1987

Booklet, 23 pages

This is a good introduction to the importance of animal health to human health and welfare. The booklet touches on the environmental factors that determine health in animals.

Option 4 – Animal Care

Source: Nebraska Cooperative Extension Service, 4-H Division

The Atrium File

(No. 218)

Producer: Alberta Agriculture, 1987

16 mm Film, 1/2" VHS, Beta or 3/4" Videotape, 25 minutes

Who or what killed the corn plant? This is the topic of a special news report by the GROW news bureau. This fictional investigation looks at the growth requirements of plants in an atrium setting. Clues are provided which lead to the answer to the question. In the process, the maintenance and design of atrium settings is discussed.

Year Two – Theme 2

Source: Alberta Agriculture, Film Library

Barley Production in Alberta

(FS 000-7)

Pub: Alberta Agriculture, 1986

Fact Sheet, 3 pages

Some general information on the production and uses of barley are contained in a newsletter format.

Year Three – Theme 1

Source: Alberta Agriculture, Print Media Branch

The Bee

(No. 616-11)

Producer: Time-Life Films, 1975

16 mm Film, 25 minutes

This film is a good introduction to beekeeping and covers most aspects of the industry. It touches on so-called killer bees and gives a brief account of their origins.

Option 5 – Beekeeping

Source: Alberta Agriculture, Film Library

Beef Cattle in Alberta

(FS 000-17)

Pub: Alberta Agriculture, 1986

Fact Sheet, 4 pages

This fact sheet provides some general information on the production and marketing of beef in Alberta.

Year Three - Theme 1; Year Three - Theme 2; Option 6 - Cattle

Source: Alberta Agriculture, Print Media Branch

Beef Seed Stock

(No. 427)

Producer: T.A.H.L. Commercial Film, 1983

16 mm Film, or 1/2" VHS Videotape, 10 minutes

This film outlines the dynamic, innovative, and highly sophisticated beef seed stock industry in Alberta, and explains why buyers come to Alberta for their beef genetics. An overview of the artificial insemination and embryo transplant technologies is presented.

Year Three - Theme 2

Source: Alberta Agriculture, Film Library

Beekeeping in Alberta

(FS 000-18)

Pub: Alberta Agriculture, 1986

Fact Sheet, 2 pages

This fact sheet gives general information on the beekeeping industry in Alberta.

Option 5 - Beekeeping

Source: Alberta Agriculture, Print Media Branch

Build It Better with Beef

Pub: Beef Information Centre, 1984

Set of Lessons, 65 pages.

These lesson plans outline some of the activities for junior high school students and are designed to promote beef as a healthy source of protein, basic nutrients and fats in our diet.

Year Two - Theme 1

Source: Beef Information Centre

Build Your Own Pollen Trap

(Agdex 616-22)

Pub: Engineering Branch, Alberta Agriculture, 1985

Pamphlet, 4 pages

Instructions for the construction of a pollen trap are given in this pamphlet.

Option 5 - Beekeeping

Source: Alberta Agriculture, Print Media Branch

Bush Fruits in Alberta

(FS 230/20-2)

Pub: Alberta Agriculture, 1979

Fact Sheet, 9 pages

This fact sheet gives a brief coverage of the methods for cultivation of native and imported berry fruits.

Option 11 - Fruit Crops

Source: Alberta Agriculture, Print Media Branch

Canada Is Cattle Country

Pub: Beef Information Centre, 1984

Set of Lessons, 35 pages

This is a series of activity lessons on nutrition, ruminants, cow-calf operators, feedlots, transportation, and marketing of beef. This resource kit about the beef industry was developed for teachers and students in Grades 4, 5, 6.

Year Two - Theme 1; Year Three - Theme 2; Option 6 - Cattle

Source: Beef Information Centre

Note: For Teacher Reference

Canada's Food Guide Handbook (Revised)

Pub: Health and Welfare Canada, 1988

Booklet, 56 pages

Written for nutritionists, teachers, and health educators, this booklet contains information on special applications of Canada's food rules. The importance of exercise is stressed. Age differences are outlined.

Year One - Theme 1; Year Two - Theme 1; Year Three - Theme 1

Source: Health and Welfare Canada, Health Promotion Branch

Note: An earlier edition (1986) was granted Supplementary status for Health and Personal Life Skills, Grade 8 - Theme IV.

Canola Canada

(No. 144VT)

Producer: Alberta Agriculture, 1984

16 mm Film or 3/4" Videotape, 9 minutes

Good management practices in Canola production are contained in this 9-minute videotape.

Option 24 - Oilseed (Canola)

Source: Alberta Agriculture, Film Library

Canola Production in Alberta

(Agdex 149/20-1)

Pub: Alberta Agriculture, 1987

Booklet, 31 pages

This useful reference for farmers suggests ways to maximize returns from canola production.

Option 24 - Oilseed (Canola)

Source: Alberta Agriculture, Print Media Branch

Note: For Teacher Reference

Canola Production in Alberta

(FS 000-9)

Pub: Alberta Agriculture, 1986

Fact Sheet, 4 pages

Some history and general information about Canola are given in short newsletter format.

Year Three - Theme 1; Option 24 - Oilseed (Canola)

Source: Alberta Agriculture, Print Media Branch

Canola Production on the Prairies

(No. 143 VT)

Producer: Alberta Agriculture, 1985

16 mm Film or 1/2" VHS Videotape, 17 minutes

This film covers the entire growth cycle of canola, from stand establishment, through seeding, and along to harvest. It identifies the weeds and pests that harass canola, with information on prevention and cure.

Option 24 – Oilseed (Canola)

Source: Alberta Agriculture, Film Library

Careers in Agriculture

(No. 350-1 VT)

Producer: Alberta Agriculture, 1985

1/2" VHS Videotape, 30 minutes

Careers in agriculture are surveyed throughout the agricultural industry, covering production, agribusiness, services, research and development, and extension services.

Year One – Survey

Source: Alberta Agriculture, Film Library

Careers in the Agri-Food System

(Pub 5200/E)

Pub: Agriculture Canada, 1985

Booklet, 13 pages

This booklet summarizes employment opportunities in food production, processing, research, marketing, services, education and communications. A list of Canadian post-secondary agricultural schools is provided.

Year One – Survey

Source: Agriculture Canada, Communications Branch

Cattle Option

(No. 415)

Producer: Alberta Agriculture, 1986

16 mm Film or 1/2" VHS Videotape, 16 minutes

The film examines the marketing of beef cattle from the various options of selling. It looks at auction marts, "on hoof" to packing companies, and "rail grade" which is the sale of carcasses, and feedlot sales. The beef industry is one form of agricultural production not dependent on marketing boards.

Option 22 – Marketing Systems

Source: Alberta Agriculture, Film Library

Computers and the Farm Operation: A Selective Bibliography

Nussbaumer, Allison

Pub: Alberta Agriculture, 1987

Pamphlet, 7 pages

This is a useful bibliography of articles and pamphlets on computers in agriculture.

Option 7 – Computers and Agriculture

Source: Alberta Agriculture, Library Services Branch

Note: For Teacher Reference

Conservation Farming

Hughes, Harold A.

Pub: John Deere & Company, 1980

Book, 150 pages

The book is a good reference to many aspects of modern farming. It gives some emphasis on the U.S. situation. Written at a high reading level, it presents an interesting approach worthy of simplification for junior high.

Year One - Theme 2; Year One - Theme 3; Year Two - Theme 3; Year Three - Theme 1;

Year Three - Theme 3; Option 8 - Crop Protection

Source: John Deere Education Services

Controlling Weeds

(FS 640-5)

Pub: Alberta Agriculture, 1981

Fact Sheet, 4 pages

This is a general overview of types of weed pests and the biological, chemical and mechanical methods of control.

Option 8 - Crop Protection

Source: Alberta Agriculture, Print Media Branch

Coping with the Effects of Weather on Agriculture

(FS 075-3)

Pub: Alberta Agriculture, 1984

Fact Sheet, 4 pages

This fact sheet presents information on weather modification programs and crop insurance programs in Alberta. The reading level is geared to older students.

Option 34 - Weather and Crop Management

Source: Alberta Agriculture, Print Media Branch

Dairy Cattle in Alberta

(FS 000-13)

Pub: Alberta Agriculture, 1986

Fact Sheet, 4 pages

This is a general reference to milk production and the distribution of dairy farms in Alberta.

Year One - Theme 1

Source: Alberta Agriculture, Print Media Branch

Developing a Farm Office Procedure

(FS 818-17)

Pub: Farm Business Management Branch, Alberta Agriculture, 1983

Fact Sheet, 4 pages

This is a brief "how to" publication on developing a simple filing system for farm documents.

Option 25 - Planning and Finances: The Business Side of Farming

Source: Alberta Agriculture, Print Media Branch

"Drought", in Environment Views

Volume Eight, Number Six, Spring 1986

Pub: Alberta Environment

Periodical, 32 pages

This issue deals with drought from various viewpoints, with the aim of increasing awareness of environmental issues among Albertans.

Year One - Theme 3; Option 34 - Weather and Crop Management

Source: Alberta Environment, Communications Branch

Dryland Salinity in Alberta

(ECA82-17/1B13)

Lilley, John

Pub: Environment Council of Alberta, 1982

Booklet, 39 pages

The booklet explains causes, effects, costs, and corrective measures to counter dryland salinity. Salt tolerances of various crops and grasses are listed.

Year One - Theme 3; Year Two - Theme 3

Source: Environment Council of Alberta

Note: For Teacher Reference

Energy Use for Farm Trucking in Alberta

(Agdex 826-1)

Birch, Alfred, and G. Nabi Chaudhary

Pub: Economic Services Division, Alberta Agriculture, 1983

Booklet, 40 pages

This booklet provides results and analysis of a survey on uses of farm trucks: characteristics, costs, and energy consumption.

Option 31 - Transportation

Source: Alberta Agriculture, Print Media Branch

Energy: Where Do We Go From Here?

(No. 713VT)

Producer: Alberta Agriculture, 1980

1/2" VHS Videotape, 28 minutes

This program celebrates the ingenuity and innovations of farmers here and abroad, people who refuse to be daunted or defeated by the prospect of diminished conventional energy supplies. This program illustrates the shared inventiveness of scientists, farmers, and consumers in Alberta, Saskatchewan, Ontario and Nebraska.

Year Three - Theme 1

Source: Alberta Agriculture, Film Library

Farm Energy Management in Alberta

(Agdex 769-1)

Pub: Engineering and Rural Services Division, Alberta Agriculture, 1982

Booklet, 34 pages

This is a detailed analysis of energy use and supply on the farm. The booklet contains some interesting graphics and good ideas for energy conservation strategies.

Year Three - Theme 1

Source: Alberta Agriculture, Print Media Branch

Note: For Teacher Reference

Farm Facts (for City Folk)

Pub: Canadian Agricultural Chemicals Association, 1983

A lesson plan for urban schools, 19 pages

Designed to promote a general awareness of the importance of agriculture, the lesson plan contains some facts and activities for junior high school students.

Year One - Survey

Source: Crop Protection Institute of Canada

Farm Office Fit It All Together

(Homedex 1830-10-1)

Jackson, Pauline

Pub: Home Economics Branch, Alberta Agriculture, 1986

Booklet, 39 pages

This booklet presents an overview of record keeping practices, and includes some useful spreadsheet and graph formats.

Option 25 – Planning and Finances: The Business Side of Farming

Source: Alberta Agriculture, Print Media Branch

Farming for the Future: Progress Report

Pub: Alberta Agriculture Research Council of Alberta, 1987

Booklet, 47 pages

Information about ongoing research projects and farm demonstration projects are discussed in this booklet.

Year Two – Theme 2; Year Three – Theme 2; Option 28 – Research and Technologies

Source: Alberta Agriculture, Research Division

Note: For Teacher Reference

Feeding the World

(ISBN:0-7134-4264-6)

Fyson, Nance Lui

Pub: B.T. Batsford Ltd., London, 1984

Book, 72 pages

Primarily a resource on worldwide food consumption, distribution, diet, and nutrition, this book places some emphasis on needs of developing countries.

Year One – Survey; Year One – Theme 2; Year Three – Theme 1; Option 2 – Agricultural Horizons: An Examination of Agriculture Around the World

Source: Distributed in Canada by General Publishing Co. Ltd.

Food Drying: A Beginner's Guide

(Agdex 1157-1)

Pub: Alberta Agriculture, 1985

Booklet, 24 pages

This is a good reference guide for classroom activities using the various methods described.

Option 27 – Processing and Preserving

Source: Alberta Agriculture, Print Media Branch

Food for Thought

Latchford, Linda, and Margaret Larkin

Pub: Ontario Ministry of Agriculture and Food, 1986

Set of Fact Sheets, 72 pages

These fact sheets describe sources of various food products, both domestic and foreign and give some facts on production, cultivation, preparation and storage.

Year One – Survey

Source: Ontario Ministry of Agriculture and Food

Forage Crops in Alberta

(FS 000-12)

Pub: Alberta Agriculture, 1986

Fact Sheet, 4 pages

This fact sheet provides information on the types and uses of forage crops, where they are grown, and their contribution to soil conservation and improved condition of the land.

Year Three - Theme 1; Option 6 - Cattle; Option 10 - Forage Crop Production

Source: Alberta Agriculture, Print Media Branch

Forage Harvesting and Handling Systems

(FS 745-6)

Pub: Alberta Agriculture, 1983

Fact Sheet, 12 pages

This fact sheet provides a general overview of harvesting, with examples of mechanical and procedural requirements needed for good quality hay.

Year Three - Theme 1; Option 10 - Forage Crop Production

Source: Alberta Agriculture, Print Media Branch

Freezing Foods

(Homedex 1560/E)

Pub: Agriculture Canada, 1985

Booklet, 35 pages

This is a useful guide to the freezing of foods for homemakers and home economists.

Option 27 - Processing and Preserving

Source: Alberta Agriculture, Print Media Branch

The Future World of Agriculture

(ISBN: 0531-04880-2)

Murphy, Wendy B.

Pub: Walt Disney Productions, 1984

Book, 112 pages

The emphasis in this book is on production. It can be used by students at the junior high level for research into agricultural history, world agriculture, new technology, and space.

Year One - Survey; Year Two - Theme 2

Source: Franklin Watts of Canada

Gardening on the Prairies: The Complete Guide to Canadian Prairie Gardening

(ISBN: 0-88833-119-3)

Vick, Röger

Pub: Western Producer Prairie Books, 1987

Book, 246 pages

This book gives a general reference on home gardening. Although written for adults, it is useable by junior high students.

Year Two - Theme 2; Option 14 - Home Gardening and Food Production

Source: Western Producer Prairie Books

Note: For Teacher Reference

Gone with the Wind - Too

(No. 573)

Producer: Alberta Agriculture, 1984

16 mm Film, 1/2" VHS or 3/4" Videotape, 24 minutes

This film examines the devastating potential for soil erosion. Over the years, soil has blown as far away as the New England States. The means of prevention and cure of soil erosion are covered.

Year Two - Theme 3

Source: Alberta Agriculture, Film Library

Greenhouse Production in Alberta

(FS 000-19)

Pub: Alberta Agriculture, 1986

Fact Sheet, 1 page

This is a general summary of the current state of greenhouse agriculture in Alberta.

Year Two - Theme 2

Source: Alberta Agriculture, Print Media Branch

"Groundwater" in Environment Views

Volume Four, Number Two, June/July 1981

Pub: Alberta Environment

Periodical, 40 pages

This issue deals with groundwater from various viewpoints, with the aim of increasing awareness of environmental issues among Albertans.

Year One - Theme 3

Source: Alberta Environment, Communications Branch

Note: For Teacher Reference

Groundwater: A Part of the Hydrologic Cycle

(No. 552)

Producer: Cherry Film Productions, 1979

16 mm Film, 29 minutes

This film introduces concepts of water table and hydraulic head and the movement of ground - water from recharge areas to discharge areas. It gives a broad scope on this aspect of our environment.

Year One - Theme 3

Source: Alberta Agriculture, Film Library

Home Canning of Meat and Poultry

(Homedex 1151-30)

Pub: Alberta Agriculture, 1985

Booklet, 23 pages

This booklet contains general information and processes for canning meats.

Option 27 - Processing and Preserving

Source: Alberta Agriculture, Print Media Branch

Horse Management: Feeding

(Agdex 460/50-1)

Pub: Alberta Agriculture, 1987

Booklet, 28 pages

This booklet is a reference for determining specific and practical feeding schedules for horses.

Option 15 - Horses

Source: Alberta Agriculture, Print Media Branch

Note: For Teacher Reference

Horses in Alberta

(FS 000-26)

Pub: Alberta Agriculture, 1986

Fact Sheet, 2 pages

This fact sheet provides a brief introduction to uses of horses and breeding of horses in Alberta.

Option 15 – Horses

Source: Alberta Agriculture, Print Media Branch

Hydroponics: A Guide to Soilless Culture Systems

Grant, Gordon

Pub: Alberta Horticulture Research Centre, Alberta Agriculture, 1987

Pamphlet, 22 pages

The pamphlet is a good reference to a variety of simple hydroponic systems outlining construction and nutrient programs. It may be useful as a reference for constructing classroom experiments.

Year Two – Theme 2

Source: Alberta Horticultural Research Centre

Note: For Teacher Reference

Improving the Odds

(No. 392VT)

Producer: Alberta Agriculture, 1982

1/2" VHS or 3/4" Videotape, 28 minutes

This program looks at why agriculture research is important to the economy of this province. It also reviews some of the exciting research discoveries of the past and speculates on the potential of future projects.

Year Three – Theme 2

Source: Alberta Agriculture, Film Library

Irrigation Agriculture in Alberta: Summary

(ECA 81-17/IB9)

Sanderson, Kim

Pub: Environment Council of Alberta, 1982

Booklet, 10 pages

This booklet analyzes irrigation and production from irrigated lands in Alberta – benefits and problems, using colourful photos and graphical presentations.

Year One – Theme 3; Option 18 – Irrigation

Source: Environment Council of Alberta

Irrigation in Alberta

(Agdex 560-1)

Pub: Alberta Agriculture, 1985

Booklet, 10 pages

This booklet is a general overview of history, methods, crops, and distribution of irrigated lands in Alberta.

Year One – Theme 3; Option 18 – Irrigation

Source: Alberta Agriculture, Print Media Branch

Note: For Teacher Reference

Jams, Jellies and Other Preserves

(Homedex 1152)

Pub: Agriculture Canada, 1985

Booklet, 19 pages

The booklet provides background information and recipes.

Option 27 – Processing and Preserving

Source: Alberta Agriculture, Print Media Branch

The Kids' Whole Future Catalog

(ISBN: 0394-95090-9)

Taylor, Paula

Pub: Random House, New York, 1982

Book, 254 pages

This book is a collection of readings, pictures, and projects that show how technology may affect our lives in the future.

Option 28 – Research and Technologies

Source: Random House of Canada Ltd.

Know More About Cattle

Pub: Beef Information Centre, no date

Pamphlet, 6 pages

The pamphlet introduces beef production of cow-calf and feedlot businesses in Canada.

Option 6 – Cattle

Source: Beef Information Centre

"Land Reclamation", in Environment Views

Volume Three, Number Seven, April/May, 1981

Pub: Alberta Environment

Periodical, 36 pages

This issue deals with land reclamation from various viewpoints, with the aim of increasing awareness of environmental issues among Albertans.

Year Three – Theme 3

Source: Alberta Environment, Communications Branch

Landscaping Alberta Yards

(Agdex 271/17-2)

Casement, E.B.

Pub: Alberta Agriculture, 1988

Booklet, 23 pages

The content of this booklet centres around planning and scheduling on a city lot. Ideas for a sample site plan are developed.

Option 19 – Landscape and Trees

Source: Alberta Agriculture, Print Media Branch

A Link in the Chain

(No. 310VT)

Producer: Prairie Farm Rehabilitation Administration, 1985

1/2" VHS Videotape, 28 minutes

This film is about life on the prairies, from the dirty thirties through to the eighties. It describes soil and water conservation, community pastures and shelterbelts, strip farming and trash cover, dugouts and dams, irrigation systems and water; the things that have made dryland farming possible and life on the prairies a little easier.

Year One – Theme 3

Source: Alberta Agriculture, Film Library

Machinery for Tillage and Planting

(FS 740-2)

Pub: Alberta Agriculture, 1984

Fact Sheet, 4 pages

This fact sheet provides a listing and brief description of machinery used in tillage and planting of field crops as well as the soil considerations.

Year One – Theme 2

Source: Alberta Agriculture, Print Media Branch

Note: For Teacher Reference

The Magic of Water

(No. 753)

Producer: Century Films, 1975

16 mm Film, 27 minutes

In southern Alberta, rain does not always arrive when it is needed; irrigation provides the life giving moisture instead. The film outlines the need for controlled application of water and the common systems in use.

Year One – Theme 3; Option 18 – Irrigation

Source: Alberta Agriculture, Film Library

Maintaining and Expanding the Agricultural Land Base in Alberta – Summary Report and Recommendations

(ECA 82-17/IB18)

Pub: Environment Council of Alberta, 1984

Booklet, 37 pages

This booklet contains information on the importance of agriculture to the economy of Alberta, and the reasons for protection of our agricultural land base. Recommendations may provide material for class discussion.

Year Three – Theme 3

Source: Environment Council of Alberta

Note: For Teacher Reference

Maintaining and Expanding the Agricultural Land Base in Alberta – Terms of Reference and Background Information

(ECA 82-17/RR1)

Thompson, Peggy S.

Pub: Environment Council of Alberta, 1982

Booklet, 24 pages

The booklet gives information on the importance of agriculture to the economy of Alberta, and the conditions that threaten our agricultural land base. Analysis of problems may provide material for class discussion.

Year Two – Theme 3; Year Three – Theme 3

Source: Environment Council of Alberta

Note: For Teacher Reference

Managing a Small Duck Flock

(Pub 1524)

Pub: Agriculture Canada, 1982

Booklet, 11 pages

This is a brief guide to raising ducks.

Option 26 – Poultry

Source: Agriculture Canada, Communications Branch

Market Gardening in Alberta

Pub: Alberta Agriculture, 1986

Fact Sheet, 1 page

This fact sheet provides a general overview of market gardening.

Option 21 – Market Gardening

Source: Alberta Horticultural Research Centre

Marketing Alberta Eggs / How Farmers Market Eggs in Alberta

Pub: (Folder) Alberta Egg and Fowl Marketing Board, 1982

Pub: (Booklet) Canadian Federation of Agriculture, 1982

Folder, 6 pages

Booklet, 28 pages

This resource explains the function and operation of poultry marketing boards.

Option 26 – Poultry

Source: Alberta Egg and Fowl Marketing Board

The Marvelous Prairie Mega Machine

(No. 850 VT)

Producer: CN Grain Communications, 1987

1/2" VHS Videotape, 24 minutes

This film explores Canada's "marvelous prairie mega machine" – the Canadian grain industry, from seeding to harvest, from prairie elevator to port terminal. The story is told by farmers, the Canadian Wheat Board, and elevator and railway personnel.

Year One – Theme 2

Source: Alberta Agriculture, Film Library

Men, Machines and Land

Pub: Farm and Industrial Equipment Institute, 1974

Book, 73 pages

This book on the history and development of a wide variety of farm equipment is well illustrated and written for the general public.

Year One – Survey; Year One – Theme 2; Year Two – Theme 3; Year Three – Theme 1;

Option 1 – Agriculture and Human History; Option 31 – Transportation

Source: Farm and Industrial Equipment Institute

Milk and Milk Products

(No. 990-7)

Producer: Steinberg, 1982

16 mm Film, 15 minutes

Teens visit a dairy farm and see how cows are milked, how milk is delivered to a dairy plant, and cheese making, dairy processing, and marketing.

Year One – Theme 1

Source: Alberta Agriculture, Film Library

Milk: Where It All Begins

Pub: The Milk Foundations of Alberta, 1987

Booklet, 12 pages.

This booklet is an excellent introduction to milk products. It traces milk from cow to packaged, processed goods.

Year One – Theme 1

Source: Dairy Nutrition Council of Alberta

The Normal Animal, Unit I, 4-H Veterinary Science

Rice, Duane

Pub: Nebraska Cooperative Extension Service, 1987

Booklet, 48 pages

The booklet covers the basic care of healthy animals; how to recognize signs of distress; basic diagnosis; nutrition and physical needs. Activities are based on the use of members' own pets.

Option 4 – Animal Care

Source: Nebraska Cooperative Extension Service, 4-H Division

Nutrients for Cattle

(Agdex 400/50-3)

Pub: Alberta Agriculture, 1986

Fact Sheet, 4 pages

This fact sheet provides a summary of energy and nutrient requirements of cattle, and the content in various feedstuffs. It can be used to determine sources of food for a balanced diet and answer the question why are supplements needed?

Option 6 – Cattle

Source: Alberta Agriculture, Print Media Branch

Note: For Teacher Reference

Oats Production in Alberta

(FS 000-8)

Pub: Alberta Agriculture, 1986

Fact Sheet, 2 pages

The fact sheet contains general information on the production and uses of oats.

Year Three – Theme 1

Source: Alberta Agriculture, Print Media Branch

Oh Gully! Where Is the Soil?

(No. 572)

Producer: Tuscan Film Productions, 1983

16 mm Film, 22 minutes

This film illustrates the causes and types of soil erosion by water. It outlines tillage and cropping systems considered good management that will minimize erosion.

Year Two – Theme 3

Source: Alberta Agriculture, Film Library

Parasites of Horses

(Agdex 460/661-1)

Pub: Alberta Agriculture, 1983

Fact Sheet, 5 pages

There are some good reproducible graphics on life cycles of various parasites contained in this fact sheet.

Option 15 – Horses

Source: Alberta Agriculture, Print Media Branch

Note: For Teacher Reference

Pasture Management

(No. 135)

Producer: Alberta Agriculture, 1984

16 mm Film or 1/2" VHS Videotape, 24 minutes

This film explains how a farmer can improve the productivity of his pasture through better management practices. It focuses on the importance of using adequate fertilizer, the right grass for the right soil conditions, and a rotational system of pasture management.

Year Three - Theme 1; Option 10 - Forage Crop Production

Source: Alberta Agriculture, Film Library

Patterns of Climate

(No. VC249603)

Series: North America: Growth of a Continent

Producer: TV Ontario, 1980

1/2" VHS Videotape, 15 minutes

This videotape explains how latitude, earth's rotation, altitude, and wind currents affect the climate, and discusses the climates of the various landforms of Alberta.

Option 34 - Weather and Crop Management

Source: ACCESS NETWORK

Pest Wars

(No. 685)

Producer: Alberta Agriculture, 1984

16 mm Film, 1/2" VHS or 3/4" Videotape, 28 minutes

This is the story of the farmer's battle against pests (insects, weeds and diseases) that every year cost billions of dollars in lost food production. It describes the main pest enemies and how farmers are able to combat them.

Year Two - Theme 2; Option 8 - Crop Protection

Source: Alberta Agriculture, Film Library

Pesticides: Something to Think About

Pub: Christian Farmers Federation, 1985

Booklet, 19 pages

The booklet examines some controversial issues in pesticide use from a practical and conservationist perspective. Some articles are of a mature reading level.

Option 8 - Crop Protection

Source: Christian Farmers Federation

Note: For Teacher Reference

Pickles and Relishes

(Homedex 1153-1)

Pub: Agriculture Canada, 1985

Booklet, 23 pages

This booklet gives background information and recipes for pickle making and relishes.

Option 27 - Processing and Preserving

Source: Alberta Agriculture, Print Media Branch

Planting Farm, Field & Roadside Shelterbelts in Alberta

(Agdex 276/22)

Pub: Alberta Agriculture, 1981

Pamphlet, 6 pages

This pamphlet outlines the purpose, planning, planting and initial care of shelterbelt trees.

Option 19 – Landscape and Trees

Source: Alberta Agriculture, Print Media Branch

Pork Production in Alberta

(FS 000-14)

Pub: Alberta Agriculture, 1986

Fact Sheet, 3 pages

General information on hog production and marketing is presented.

Option 13 – Hogs

Source: Alberta Agriculture, Print Media Branch

Poultry Production in Alberta

(Agdex 450-20-1)

Pub: Alberta Agriculture, 1983

Booklet, 22 pages

This is a detailed look at commercial poultry production for farmers and agriculturalists.

Option 26 – Poultry

Source: Alberta Agriculture, Print Media Branch

Poultry Production in Alberta

(FS 000-16)

Pub: Alberta Agriculture, 1986

Fact Sheet, 3 pages

This fact sheet provides general information on poultry production in Alberta.

Option 26 – Poultry

Source: Alberta Agriculture, Print Media Branch

Prairie Soils: The Case for Conservation

Pub: Prairie Farm Rehabilitation Administration, 1985

Booklet, 12 pages

This is a simple and colourfully illustrated overview of soil degradation and conservation. A logical extension and practical application of concepts learned in a study of physical characteristics of soil.

Year Two – Theme 3

Source: Prairie Farm Rehabilitation Administration (P.F.R.A.) Headquarters

Preventing Bird Damage to Prairie Crops

(Agdex 685-4)

Pub: Canadian Wildlife Service, 1982

Pamphlet, 19 pages

This pamphlet identifies various methods of damage control.

Option 9 – Farming and Wildlife

Source: Alberta Agriculture, Print Media Branch

Principles of Pasture Management

(FS 130/10-1)

Pub: Alberta Agriculture, 1977

Fact Sheet, 4 pages

A simple explanation of basic principles is presented in this fact sheet.

Year Three – Theme 1; Option 10 – Forage Crop Production

Source: Alberta Agriculture, Print Media Branch

Note: For Teacher Reference

A Proposed Study Package on Soil

Pub: Alberta Chapter of the Canadian Society of Environmental Biologists, 1985

Set of Lessons, 114 pages

These lessons are based primarily on media resources and factual information provided.

Activities include tasks and answering related questions.

Year Two – Theme 3; Year Three – Theme 3

Source: Canadian Society of Environmental Biologists, Alberta Chapter

Note: For Teacher Reference

Raising Meat Rabbits in Alberta

(Agdex 476/20-1)

Briarpatch Farms Ltd.

Pub: Alberta Agriculture, 1984

Booklet, 58 pages

This booklet is useful reference on the raising of rabbits for market.

Option 4 – Animal Care

Source: Alberta Agriculture, Print Media Branch

The Reason Why

(No. 301)

Producer: Century II Motion Pictures, 1983

16 mm Film, 28 minutes

Why do countries with a strong agricultural base usually have a high standard of living? This film provides insights into the relationship between food production and economic and industrial activity. Efficient food production allows people to spend a smaller proportion of their time and income on the basic necessities including food; this frees both time and money for other efforts.

Year One – Survey

Source: Alberta Agriculture, Film Library

Rye Production in Alberta

(FS 000-22)

Pub: Alberta Agriculture, 1986

Fact Sheet, 3 pages

This fact sheet includes general information on the production and uses of rye.

Year Three – Theme 1

Source: Alberta Agriculture, Print Media Branch

Safety Guide for Farming

(Agdex 086-6)

Pub: Alberta Agriculture, 1987

Booklet, 52 pages

The booklet contains information on farm safety and the hazards of new technology.

Year One – Theme 2

Source: Alberta Agriculture, Print Media Branch

Saving Energy and Dollars on the Farm

(Pub 1775/E)

Pub: Agriculture Canada, 1985

Booklet, 102 pages

The booklet contains information on how farmers can save money through energy efficient systems in a wide range of farm applications. The ideas are well illustrated and explained.

Year Three – Theme 1

Source: Agriculture Canada, Communications Branch

Note: For Teacher Reference

A Sense of Humus

(No. 521 or NFB 106C 0176 067)

Producer: National Film Board, 1976

16 mm Film, 28 minutes

Since the Second War, North Americans have relied on a chemical lifestyle for farming. As demands deplete our chemical resources and pollution continues to increase, organic farming could be the alternative. The film focuses on Western Canadian organic farmers and how they maintain high soil quality and good crop yields without chemical inputs.

Year Two – Theme 3; Year Three – Theme 1

Sources: Alberta Agriculture, Film Library, and National Film Board of Canada

Sheep Production in Alberta

(FS 000-15)

Pub: Alberta Agriculture, 1986

Fact Sheet, 3 pages

General information on sheep production and marketing in Alberta is contained in a short newsletter.

Option 29 – Sheep and Goats

Source: Alberta Agriculture, Print Media Branch

Shelterbelts

(No. 291)

Producer: Alberta Agriculture, 1984

16 mm Film, 19 minutes

This film explores the history of Alberta's shelterbelt program. It includes the operation of the tree nursery (from planting to replanting), the procedures for acquisition, types of trees recommended, and maintenance techniques. It is a good resource for a class shelterbelt project.

Year Three – Theme 3; Option 19 – Landscape and Trees

Source: Alberta Agriculture, Film Library

Soil Fertility and Land Productivity in Alberta

(ECA 82-17/1B16)

McGill, W.B.

Pub: Environment Council of Alberta, 1982

Book, 123 pages

This publication contains abundant reproducible data (maps, charts, graphs) dealing with agricultural productivity and the factors that affect it, such as soil type, moisture, soil ph, pesticides, and irrigation.

Year One – Theme 3; Year Two – Theme 3; Year Three – Theme 1

Source: Environment Council of Alberta

Note: For Teacher Reference

Soil – How Soil Is Formed

(No. 521)

Producer: Interpretive Natural Services, 1978

16 mm Film, 14 minutes

This film discusses the formation of soil in Western Canada, beginning with the barren till deposited by continental glaciers. The contributions and interactions of four factors are discussed, with emphasis on process. The three common soil types, brown, black, and gray are discussed in relation to climate and vegetation.

Year Two – Theme 3

Source: Alberta Agriculture, Film Library

"Soils and the Environment", in Environment Views

Volume Three, Number Six, February/March, 1981

Pub: Alberta Environment

Periodical, 32 pages

This issue deals with soils and the environment from various viewpoints, with the aim of increasing awareness of environmental issues among Albertans.

Year Two – Theme 3; Year Three – Theme 3

Source: Alberta Environment, Communications Branch

Space Age Agriculture: Science

Archibald, John

Pub: Alberta Agriculture, 1988

Set of Lesson Plans, 126 pages

This Alberta based teacher handbook presents information and related instructional activities regarding the agriculture industry. The principal intent of this handbook is to provide support to the Alberta science program, but portions of the unit are also applicable to the Junior High Agriculture: Land and Life Program.

Year One – Theme 2; Year One – Theme 3; Year Two – Theme 2; Year Two – Theme 3;

Year Three – Theme 1

Source: Alberta Agriculture, Education Branch

Note: For Teacher Reference

Space Age Agriculture: Social Studies

Morris, David

Pub: Alberta Agriculture, 1988

Set of Lesson Plans, 152 pages

This Alberta based teacher handbook presents information and related instructional activities regarding the agriculture industry. The principal intent of this handbook is to provide support to the Alberta social studies program, but portions of the unit are also applicable to the Junior High Agriculture: Land and Life Program.

Year One – Survey; Year One – Theme 2; Year Two – Theme 3; Year Three – Theme 1

Source: Alberta Agriculture, Education Branch

Note: For Teacher Reference

S.P.L.A.S.H.

(No: NFB 106C 0180 525)

Producer: Michael Mills Productions for Ontario Ministry of Environment, 1980

Animated 16 mm Film, 13 minutes

This film gives an account of water and the demands placed on our waterways by agriculture and industry, and what happens to rain from the time it falls as rain until it reaches its destination. S.P.L.A.S.H. stands for sea, pond, lake, and stream headquarters.

Year One – Theme 3

Source: National Film Board of Canada

Starting a Farm in Canada

(Pub 1659/E)

Pub: Agriculture Canada, 1983

Booklet, 69 pages

The booklet contains useful information on this topic.

Year One - Survey; Year Three - Theme 1

Source: Agriculture Canada, Communications Branch

Students' Story of Grain

Pub: Alberta Wheat Pool, 1986

Booklet, 24 pages

Information on Canadian wheat varieties, production, grading, marketing, and products made from wheat is contained in this booklet.

Year One - Theme 2

Source: Alberta Wheat Pool

Sunchanger

(No. 400-9)

Producer: Elanco Division of Eli Lilly, 1978

16 mm Film, 12 minutes

This film deals with the function of the ruminant animal in changing low-quality, otherwise useless, cellulose and other roughage and waste materials into high quality protein. From solar energy through the ruminant animal, to the highest quality protein for human consumption. . . that is the sunchanger story.

Year Three - Theme 1; Option 6 - Cattle; Option 10 - Forage Crop Production

Source: Alberta Agriculture, Film Library

This Borrowed Land

(No: NFB 106C 0184 064)

Producer: National Film Board of Canada and Pacific Region Productions, 1984

16 mm Film, 28 minutes

The Peace River Valley in British Columbia is an area of rich farmland threatened by the construction of a hydroelectric dam. The women of the area are given this chance to voice their growing concern about the loss of farmland to uses not related to food production. They ask, "Will we leave our children enough land to grow food on?" They are firmly committed to their lifestyle despite difficulties. A film about agriculture, ecology, land misuse and a group of stout-willed women farmers.

Year Three - Theme 3

Source: National Film Board of Canada

Tilling the Land

(No: VC249606)

Series: North America: Growth of a Continent

Producer: TV Ontario, 1980

1/2" VHS Videotape, 15 minutes

This program contrasts pioneer farming with the highly developed agricultural operations of today. It highlights the various growing regions of North America and the specific climatic and soil conditions needed to produce different crops.

Year One - Survey

Source: ACCESS NETWORK

Transplanting Alberta Trees & Shrubs

(Agdex 275/22-1)

Grainger, G.

Pub: Alberta Agriculture, 1985

Booklet, 28 pages

This is a technical description of the transplanting of trees and shrubs.

Option 19 – Landscape and Trees

Source: Alberta Agriculture, Print Media Branch

Trapping and Conservation Manual

Pub: Field Services Division, Alberta Advanced Education and Fish and Wildlife Division, Alberta Forestry, Lands and Wildlife.

Note: A new (fifth) edition is being prepared, and is expected to be reviewed in the fall of 1989. Schools will be notified when the review is completed if authorized status is granted.

Option 32 – Trapping

Source: Alberta Vocational Centre, Lac La Biche

University of Alberta Home Gardening Course

Harapiah, John

Pub: Faculty of Extension, University of Alberta, 1986

Book, 1250 pages

This is a good general reference for teachers on botany, soils, climate, pests, and the growing of plants under controlled conditions.

Year One – Theme 3; Year Two – Theme 2; Year Two – Theme 3; Option 11 – Fruit Crops; Option 14 – Home Gardening and Food Production; Option 17 – Indoor Gardening; Option 19 – Landscape and Trees

Source: University of Alberta, Faculty of Extension

Note: For Teacher Reference

Urbanization of Agricultural Land: Summary

(ECA81-17/1B11)

Thompson, Peggy S.

Pub: Environment Council of Alberta, 1981

Booklet, 10 pages

This booklet provides general coverage and recognition of the importance of this major issue to Alberta.

Year Three – Theme 3

Source: Environment Council of Alberta

Varieties of Annual Forage Crops for Alberta 1987

(FS 120/32-1)

Pub: Alberta Agriculture, 1987

Fact Sheet, 4 pages

This fact sheet discusses the diversity of forage crops available for use in Alberta.

Year Three – Theme 1; Option 10 – Forage Crop Production

Source: Alberta Agriculture, Print Media Branch

Varieties of Perennial Hay and Pasture Crops for Alberta

(Agdex 120/32)

Pub: Alberta Agriculture, 1988

Fact Sheet, 8 pages

This fact sheet presents the diversity of forage crops in Alberta.

Year Three – Theme 1; Option 10 – Forage Crop Production

Source: Alberta Agriculture, Print Media Branch

Vegetable Production in Alberta

(FS 000-21)

Pub: Alberta Agriculture, 1986

Fact Sheet, 3 pages

General information on vegetable production in Alberta is presented in this fact sheet.

Year Three – Theme 1; Option 14 – Home Gardening and Food Production; Option 21 – Market Gardening

Source: Alberta Agriculture, Print Media Branch

Vegetation and the Soil

(No: VC249604)

Series: North America: Growth of a Continent

Producer: TV Ontario, 1980

1/2" VHS Videotape, 15 minutes

This program explores the close relationship between climate, soil, vegetation and humans. North America's natural vegetation regions are described and viewers see how glaciation, weathering, and erosion contribute to the formation of topsoil.

Year Two – Theme 3; Option 34 – Weather and Crop Management

Source: ACCESS NETWORK

"Water Resources Management: 1", in Environment Views

Volume Three, Number Two, June/July, 1980

Pub: Alberta Environment

Periodical, 36 pages

This issue deals with water resources management from various viewpoints with the aim of increasing awareness of environmental issues among Albertans.

Year One – Theme 3

Source: Alberta Environment, Communications Branch

"Water Resources Management: 2", in Environment Views

Volume Three, Number Three, August/September, 1980

Pub: Alberta Environment

Periodical, 32 pages

This issue deals with water resources management from various viewpoints, with the aim of increasing awareness of environmental issues among Albertans.

Year One – Theme 3

Source: Alberta Environment, Communications Branch

Water, Water: Making the Most of Moisture

(No. 304-1)

Producer: Alberta Agriculture, 1988

16 mm Film or 1/2" VHS Videotape, 23 minutes

This film deals with a common problem many farmers face – too much water at the wrong time. Effective management practices can conserve quantities of water for the time when they are needed.

Year One – Theme 3

Source: Alberta Agriculture, Film Library

Weather Modification in Alberta: Summary Report and Recommendations

Pub: Alberta Research Council, 1986

Booklet, 18 pages

This report deals with how hailstones develop, frequency of hail storms, cloud seeding methods and a case study of one method. It is an excellent example of how research into new technology is tested.

Option 28 – Research and Technologies; Option 34 – Weather and Crop Management

Source: Alberta Research Council

Note: For Teacher Reference

Weather Picture

(No: 304)

Producer: Alberta Agriculture, 1984

16 mm Film, 1/2" VHS or 3/4" Videotape, 27 minutes

A farmer's success is dependent on the weather. This film looks at what is being done to overcome the restrictions of our weather and climate.

Option 34 – Weather and Crop Management

Source: Alberta Agriculture, Film Library

Weed Seedling Identification

(Agdex 640-3)

Pub: Alberta Agriculture, 1986

Booklet, 25 pages

This booklet provides colour photographs and brief descriptions for the identification of 58 common species of weeds.

Option 8 – Crop Protection

Source: Alberta Agriculture, Print Media Branch

Wheat Production in Alberta

(FS 000-6)

Pub: Alberta Agriculture, 1986

Fact Sheet, 3 pages

General information on wheat production and use in Alberta is presented in this fact sheet.

Year Three – Theme 1

Source: Alberta Agriculture, Print Media Branch

Wildlife Habitat: A Handbook for Canada's Prairies & Parklands

Pub: Canadian Wildlife Service, Environment Canada, 1981

Booklet, 51 pages

This booklet presents a conservationist perspective on the maintenance and establishment of wildlife habitats on farmland.

Option 9 – Farming and Wildlife

Source: Canadian Wildlife Service, Environment Canada, Communications Branch

Wool and Sheepskins

(Agdex 430/83-1)

Handy, Kelly

Pub: Alberta Agriculture, 1987

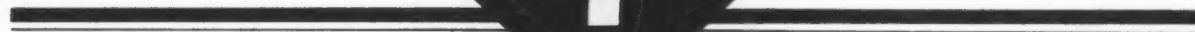
Book, 119 pages

This publication covers the selection, preparation, tanning, drying, dying of sheepskins and the spinning of wool.

Option 29 - Sheep and Goats

Source: Alberta Agriculture, Print Media Branch

CHAPTER



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APPENDIX



SUPPLEMENTARY LEARNING RESOURCES LISTING BY SOURCE

The following alphabetical listing of supplementary learning resources by source is provided to assist teachers in obtaining supplementary learning resources. Please note that many of the items listed in this section are available without charge from the government agencies indicated. Current procedures for obtaining these resources have been briefly noted. Unless otherwise specified, items listed are normally available as single copies only.

To quickly identify the source for a particular resource, refer to Chapter 6. This chapter lists all resources alphabetically. The source, identified at the end of each resource entry, can then be located alphabetically in this listing.

ACCESS NETWORK

Media Resource Centre
295 Midway Park S.E.
Calgary, Alberta
T2X 2A8
Ph: 256-1100

North America – Growth of a Continent Series:

<i>Patterns of Climate</i>	BPN VC 249 603
<i>Tilling the Land</i>	BPN VC 249 606
<i>Vegetation and the Soil</i>	BPN VC 249 604

Ordering Information:

A complete catalogue is available with detailed instructions for ordering materials. Dubbing services are provided at cost plus postage and handling to educational institutions in the province of Alberta. When ordering, please use the Basic Program Number (BPN) plus the series and title(s).

Agriculture Canada
Communications Branch
930 Carling Avenue
Ottawa, Ontario
K1A 0C7
Ph: (613) 995-5222

Careers in the Agri-Food Business
(Pub 5200/E)
Managing a Small Duck Flock
(Pub 1524)
Saving Energy and Dollars on the Farm
(Pub 1775/E)
Starting a Farm in Canada
(Pub 1659/E)

Ordering Information:

Single copies of each publication are provided at no charge. Order by title and number.

Alberta Agriculture, Education Branch
Room 200, J.G. O'Donaghue Building
7000 - 113 Street
Edmonton, Alberta
T6H 5T6
Ph: 427-2402

Space Age Agriculture: Science
Space Age Agriculture: Social Studies

Ordering Information:
Single copies of each publication are provided to teachers upon request at no charge.

Alberta Agriculture, Film Library
J.G. O'Donaghue Building
Information Services Division
7000 - 113 Street
Edmonton, Alberta
T6H 5T6
Ph: 427-2127

Air Seeders
(Agdex 768)
Alberta Hail Project
(No. 303-1)
The Atrium File
(No. 218)
The Bee
(No. 616-11)
Beef Seed Stock
(No. 427)
Canola Canada
(No. 144 VT)
Canola Production on the Prairies
(No. 143 VT)
Careers in Agriculture
(No. 350-1VT)
Cattle Option
(No. 415)
Energy: Where Do We Go From Here?
(No. 713 VT)
Gone with the Wind - Too
(No. 573)
Groundwater: A Part of the Hydrologic Cycle
(No. 552)
Improving the Odds
(No. 392 VT)

A Link in the Chain
(No. 310 VT)
The Magic of Water
(No. 753)
The Marvelous Prairie Mega Machine
(No. 850 VT)
Milk and Milk Products
(No. 990-7)
Oh, Gully! Where Is the Soil?
(No. 572)
Pasture Management
(No. 135)
Pest Wars
(No. 685)
The Reason Why
(No. 301)
A Sense of Humus
(No. 536)
Shelterbelts
(No. 291)
Soil: How Soil Is Formed
(No. 521)
Sunchanger
(No. 400-9)
Water, Water: Making the Most of Moisture
(No. 304-1)
Weather Picture
(No. 304)

Ordering Information:

A complete catalogue of resources is available from the Film Library. Films are lent free of charge, but cost of shipping by parcel post collect or courier collect is the responsibility of the borrower. Booking should be at least two weeks in advance and the resource borrowed for no more than one week. Items should be returned prepaid by the same means. Please order by title and number.

Alberta Agriculture, Library Services Branch
J.G. O'Donaghue Building
7000 - 113 Street
Edmonton, Alberta
T6H 5T6
Ph: 427-2104

Computers and the Farm Operation: A Selective Bibliography

Ordering Information:

Single copies of this publication are provided to teachers at no charge.

Alberta Agriculture, Marketing Services Division
Room 304, J.G. O'Donaghue Building
7003 - 113 Street
Edmonton, Alberta
T6H 5T6
Ph: 427-7366

Alberta Horses

Ordering Information:

Single copies are provided to teachers at no charge.

Alberta Agriculture, Print Media Branch
J.G. O'Donaghue Building
7000 - 113 Street
Edmonton, Alberta
T6H 5T6
Ph: 427-2121

Agriculture in Alberta
(Agdex 000-25)
Alberta Agricultural Statistics Fact Sheet
(Agdex 853)
Alberta Cattle for Superior Performance
(Agdex 420/32-1)
Alberta Sheep Production Manual
(Agdex 430/20-1)
Alberta's Food Products
(Agdex 1100-60)
Barley Production in Alberta
(FS 000-7)
Beef Cattle in Alberta
(FS 000-17)
Beekeeping in Alberta
(FS 000-18)
Build Your Own Pollen Trap
(Agdex 616-22)

Bush Fruits in Alberta
(FS 230/20-2)
Canola Production in Alberta
(FS 000-9)
Canola Production in Alberta
(Agdex 149/20-1)
Controlling Weeds
(FS 640-5)
*Coping with the Effects of Weather on
Agriculture*
(FS 075-3)
Dairy Cattle in Alberta
(FS 000-13)
Developing a Farm Office Procedure
(FS 818-17)
Energy Use for Farm Trucking in Alberta
(Agdex 826-1)

Farm Energy Management in Alberta
 (Agdex 769-1)
Farm Office Fit It All Together
 (Homedex 1830-10-1)
Food Drying: A Beginner's Guide
 (Agdex 1157-1))
Forage Crops in Alberta
 (FS 000-12)
Forage Harvesting and Handling Systems
 (FS 745-6)
Freezing Foods
 (Homedex 1560-E)
Greenhouse Production in Alberta
 (FS 000-19)
Home Canning of Meat and Poultry
 (Homedex 1151-30)
Horse Management: Feeding
 (Agdex 460/50-1)
Horses in Alberta
 (FS 000-26)
Irrigation in Alberta
 (Agdex 560-1)
Jams, Jellies and Other Preserves
 (Homedex 1152)
Landscaping Alberta Yards
 (Agdex 271/17-2)
Machinery for Tillage and Planting
 (FS 740-2)
Nutrients for Cattle
 (Agdex 400/50-3)
Oats Production in Alberta
 (FS 000-8)
Parasites of Horses
 (Agdex 460/661-1)
Pickles and Relishes
 (Homedex 1153-1)

*Planting Farm, Field & Roadside
 Shelterbelts in Alberta*
 (Agdex 276/22)
Pork Production in Alberta
 (FS 000-14)
Poultry Production in Alberta
 (Agdex 450-20-1)
Poultry Production in Alberta
 (FS 000-16)
Preventing Bird Damage to Prairie Crops
 (Agdex 685-4)
Principles of Pasture Management
 (FS 130/10-1)
Raising Meat Rabbits in Alberta
 (Agdex 476/20-1)
Rye Production in Alberta
 (FS 000-22)
Safety Guide for Farming
 (Agdex 086-6)
Sheep Production in Alberta
 (FS 000-15)
Transplanting Alberta Trees & Shrubs
 (Agdex 275/22-1)
*Varieties of Annual Forage Crops for
 Alberta 1987*
 (FS 120/32-1)
*Varieties of Perennial Hay and Pasture
 Crops for Alberta*
 (Agdex 120/32)
Vegetable Production in Alberta
 (FS 000-21)
Weed Seedling Identification
 (Agdex 640-3)
Wheat Production in Alberta
 (FS 000-6)
Wool and Sheepskins
 (Agdex 430/83-1)

Ordering Information:

These publications can be obtained at no charge. Because quantities of items are limited, orders for class sets are not accepted. Restrict individual orders to less than 50 publications at one time. All requests from schools must be in writing, on school letterhead. Please order by title and number.

Alberta Agriculture, Research Division
Room 202, J.G. O'Donaghue Building
7000 - 113 Street
Edmonton, Alberta
T6H 5T6
Ph: 427-1956

Farming for the Future: Progress Report

Alberta Egg and Fowl Marketing Board
#15 1915 - 32 Avenue N.E.
Calgary, Alberta
T2E 7C8
Ph: 250-1197

Marketing Alberta Eggs/How Farmers Market Eggs in Alberta

Alberta Environment
Communications Branch
12th Floor Oxford Place
9820 - 106 Street
Edmonton, Alberta
T5K 2J6
Ph: 427-6267

The following are all issues of *Environment Views*:

<i>Agricultural Lands</i>	Volume Five, Number Six, November/December, 1982
<i>Drought</i>	Volume Eight, Number Six, Spring, 1986
<i>Groundwater</i>	Volume Four, Number Two, June/July, 1981
<i>Land Reclamation</i>	Volume Three, Number Seven, April/May, 1981
<i>Soils and the Environment</i>	Volume Three, Number Six, February/March, 1981
<i>Water Resources Management: 1</i>	Volume Three, Number Two, June/July, 1980
<i>Water Resources Management: 2</i>	Volume Three, Number Three, August/September, 1980

Ordering Information:

This periodical is published quarterly by Alberta Environment and distributed at no cost. It is available through the Communications Branch, Alberta Environment. Back issues listed are available upon request.

Alberta Horticultural Research Centre
Bag Service 200
Brooks, Alberta
T0J 0J0
Ph: 362-3391

Hydroponics: A Guide to Soilless Culture Systems
Market Gardening in Alberta

Ordering Information:

A letter will be required to obtain this publication at no charge.

Alberta Research Council
Publications and Sales
P.O. Box 8330, Stn. F
Edmonton, Alberta
T6H 5X2
Ph: 438-7555

Weather Modification in Alberta: Summary Report and Recommendations

Alberta Vocational Centre, Lac La Biche
Lac La Biche, Alberta
T0A 2C0
Ph: 623-5551

Trapping and Conservation Manual

Note: A new (fifth) edition is being prepared and is expected to be reviewed in the fall of 1989. Schools will be notified when the review is completed if authorized status is granted.

Alberta Wheat Pool
Corporate Affairs Department
Box 2700
Calgary, Alberta
T2P 2P5
Ph: 290-4647

*Alberta Wheat Pool Terminal Operations
Students' Story of Grain*

Beef Information Centre
#238, 2116 - 27 Avenue N.E.
Calgary, Alberta
T2E 7A6
Ph: 291-4832

*Build It Better with Beef
Canada Is Cattle Country
Know More About Cattle*

Ordering Information:
Can be obtained by written request. No charge for single copies.

Canadian Society of Environmental Biologists, Alberta Chapter
c/o Mr. Ted Code
P.O. Box 12, Substation 11
Edmonton, Alberta
T6G 2E0

A Proposed Study Package on Soil

Ordering Information:

A letter is required to obtain this publication. Please include a stamped self-addressed 8 1/2" x 11" envelope.

Canadian Wildlife Service, Environment Canada, Communications Branch
Twin Atria #2
4999 - 98 Avenue
Edmonton, Alberta
T6B 2X3

Wildlife Habitat: A Handbook for Canada's Prairies & Parklands

Ordering Information:

A letter will be required to obtain this publication at no charge.

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